Risk-Based Cleanup Plan

City Pier
Davol Street
Fall River, Massachusetts

July 15, 2011

Prepared for:

Fall River Redevelopment Authority
One Government Center
Fall River, Massachusetts

BETA Group, Inc.
Engineers • Scientists • Planners
315 Norwood Park South, Norwood, MA 02062 781.255.1982 fax: 781.255.1974
6 Blackstone Valley Place, Lincoln, RI 02865 401.333.2382 fax: 401.333.9225
email: BETA@BETA-eng.com

Risk-Based Cleanup Plan

Disposal Site: City Pier
Davol Street
Fall River, Massachusetts
RTN Number 4-17012

Prepared for: Fall River Redevelopment Authority
One Government Center
Fall River, Massachusetts 02722

Prepared by: BETA Group, Inc.
6 Blackstone Valley Place, Suite 101
Lincoln, Rhode Island 02865

Senior Project Manager: _____
Joseph R. McLoughlin II, LEP, LSP
Licensed Site Professional

July 15, 2011

Table of Contents

TABLES

FIGURES

APPENDICES

A. Laboratory Certificates of Analysis
B. Tier II Data Validation Report by Wilcox and Barton
C. Risk-Based Cleanup Risk Narrative by Wilcox and Barton
D. Seawall Inspection and Evaluation Report
E. Long-term Cap Monitoring Plan
F. Draft Activity and Use Limitation

1.0 Introduction

On behalf of the Fall River Redevelopment Authority (FRRA), BETA Group, Inc. (BETA) has prepared this Risk-Based Cleanup Plan for addressing the presence of polychlorinated biphenyl (PBC) contamination at the property known as City Pier on Davol Street in Fall River, Massachusetts (the Site). This plan represents a formal request to the United States Environmental Protection Agency (EPA) for a risk-based PCB disposal and work plan approval in accordance with 40 CFR Part 761, promulgated under the Toxic Substances Control Act (TSCA).

The results of historic and recent analytical testing has identified PCB contamination in Site soils at greater than or equal to 50 parts per million (≥50 ppm). Based on this information, PCB-impacted soil at the Site meets the definition of *PCB remediation waste* as defined under the federal PCB regulations at 40 CFR 761.3.

The proposed response actions for addressing the PCBs in Site soils include:

- Excavation and off-site disposal of soils containing greater than 100 ppm of PCBs. This level represents the Massachusetts Department of Environmental Protection's (MassDEP's) Upper Concentration Limit for PCBs. Please note that this plan has incorporated response actions necessary to also meet the requirements of 310 CMR 40.0000 et seq. to allow for the future filing of a Response Action Outcome with MassDEP;
- Excavation and consolidation of soils from the southern and northern portions (outside the proposed cap area) of the Site containing greater than 1 ppm but less than 100 ppm of PCBs to within the proposed cap area;
- Construction of engineered barriers (soil, asphalt paving, building foundation, and/or concrete caps) over an approximately 83,000 square foot area of the central portion of the Site to prevent direct contact with soils containing PCBs greater than 1 ppm but less than 100 ppm; and,
- Implementation of a deed restriction (Activity and Use Limitation) on the Site deed to require maintenance of the engineered barrier (once constructed) and detailing necessary response actions if future excavation activities are planned for the Site.

In addition to presenting the Risk-Based Cleanup Plan for the Site, this report presents the results of supplemental soil sampling activities conducted in accordance with BETA's October 15, 2010 Risk-Based TSCA Work Plan. These activities are summarized in Section 6 of this report.

2.0 Site Location and Description

The Site, known as City Pier, is owned by the FRRA and is identified as Lot 12 on Fall River Assessor's Map 0-22. This lot consists of a total of approximately 4.22 acres. The Site is located at 41º 42′ 45″ north latitude and 71º 9′ 28″ west longitude, and is zoned for mixed business district use. The Universal Traverse Mercator (UTM) coordinates for the Site are 4,619,904 N and 320,484 E. A Site Locus Map and Site Plan are included as Figures 1 and 2, respectively.

The Site is bordered on the west by the Taunton River and on the east by Davol Street. Granite bulkhead walls, rip-rap, and crushed stone border the river. The granite bulkheads extend to the west to form two piers. Materials on the surface of the Site include grass, gravel, and brush. The Site is relatively flat, with an approximate elevation of six (6) feet above the National Geodetic Vertical Datum of 1929. The Site is accessible by boat on the waterside. A 6-foot high chain-link fence with locked gates restricts access from Davol Street along a portion of the Site as shown on Figure 2. The surrounding area consists of multi-family housing, commercial properties, and condominium development areas. A condominium complex (Point Gloria) is located just north of the Site, and the Braga Bridge is located just south of the Site.

There are no known schools or institutions within 500 feet of the Site. The Taunton River abuts the subject property to the west. Protected open space areas are located approximately 0.3 miles north of the Site, and 0.2 miles south of the Site. There is also a narrow strip of protected open space (a pedestrian walkway) that runs north through the Site near Davol Street. Railroad tracks are located 0.1 miles to the east of the site. The Site is also located within the 100-year flood plain). There are no other known environmental receptors, Areas of Critical Environmental Concern (ACEC), or endangered species located at the Site.

3.0 Identification of Project Contacts

The project contact for the entity assuming responsibility for the submission of this report is:

Fall River Redevelopment Authority
One Government Center
Fall River, Massachusetts 02722
Contact: Kenneth Fiola, Jr., Executive Director
Phone: (508) 324-2620

The Licensed Site Professional of Record is:

Joseph R. McLoughlin II, LEP, LSP
BETA Group, Inc.
6 Blackstone Valley Place, Suite 101
Lincoln, Rhode Island 02865
Phone: (401) 333-2382
LSP License No. 2039

4.0 Site History

The information provided in this section is largely based on previous environmental reports prepared by others, including:

- *Phase I Initial Site Assessment (ISA) Report*, Metcalf & Eddy, Inc. (M&E), April 17, 2003
- *Phase II Comprehensive Site Assessment (CSA) Report and Phase III Remedial Action Plan (RAP)*, ESS Group, Inc (ESS) – January 19, 2006
- *Revised Phase III RAP and Phase IV Remedy Implementation Plan* (RIP), ESS – January 19, 2007

According to historical Sanborn Fire Insurance Rate Maps, the Site was occupied by Cook Borden & Co. between 1888 and 1950 for use as a lumber yard with milling operations. A historical map included in the M&E Phase I ISA report indicates that the northeastern portion of the Site contained a "fill station" during the later part of this period. Lumber yard operations were ceased between 1950 and 1976, and all associated buildings were removed. After 1976, the Site was used for boat storage and as a marina.

Circa 1900, the Fall River Gas Company was located east of the Site between Davol Street and the railroad tracks. A gas holder was located near the southeast corner of the Site. Also in the early 1900s, the area south of the Site was used as a coal yard. According to sources in the Fall River community, a restaurant operated in the southern portion of the Site in the early 1980's.

The FRRA acquired the property in 1982. According to available resources, the Site has been used for occasional boat storage, repairs, and river access. The Site was under lease by the FRRA to J. Cashman, Inc. until September 2005 for the storage of construction equipment, and also for use as an access point to perform bridge construction work along the Taunton River. Currently, the Site is undeveloped, with access to the southern portion of the Site restricted by a chain-link fence and locked gate.

5.0 MassDEP Response Actions

5.1 Initial PCB Release Identification

In August 2001, Metcalf & Eddy (M&E) completed a Targeted Brownfields Assessment (TBA) for the Site for the EPA. Initial field investigations included the collection of soil and groundwater samples from various locations across the Site. Field investigations identified concentrations of PCBs in soil that exceeded the applicable MassDEP Reportable Concentrations for RCS-1 soils. MassDEP was notified of the 120-day reporting conditions on April 17, 2002, and RTN 4-17012 was subsequently assigned to the Site. The Site was classified as a Tier II disposal site on April 17, 2003.

The contamination is believed to have originated from impacted fill material that was placed on-Site during the initial development of the property. The original source of the fill material was not documented and is unknown. An alleged former on-site transformer building is not thought to be the source for the PCB contamination at the Site due to the fact that the existence of the structure could not be confirmed through available information. Based on soil samples collected to date, soil contamination is located at the Site at depths between 0 and 10 feet below ground surface.

5.2 Additional Releases

The following additional release conditions (as defined by MassDEP) have been identified at the Site. These conditions are listed by MassDEP Release Tracking Number.

RTN 4-10173

In December 1993, 30 gallons of waste oil was reportedly released from a truck parked on the pier. According to ESS' Phase II/III Report for RTN 4-17012, there was no visual evidence of a release at the Site and no record of any response actions for this release. In 1996, the MassDEP recommended the RTN be closed. This RTN is currently listed as an "adequately regulated" disposal site for which response actions were overseen by the U.S. Coast Guard and no RAO is required.

RTN 4-18690

On September 22, 2004 MassDEP notified the FRRA that laboratory data for a surficial soil sample, B-19, showed a PCB concentration of 140 parts per million (ppm). This sample is located within 500 feet of the Point Gloria Condominium Complex and, therefore, constituted an imminent hazard condition. RTN 4-18690, was issued to the Site for this new reporting condition. An Imminent Hazard Evaluation was performed within fourteen days of notification and an Immediate Response Action (IRA) Plan was submitted to MassDEP on November

19, 2004. A Modified IRA Plan (January 14, 2005) was subsequently submitted to MassDEP on January 14, 2005. An IRA Completion Report was submitted on July 14, 2005, and this RTN was linked with RTN 4-17012 (the primary Site RTN). To abate the imminent hazard condition, the area around sample point B-19 was covered by geotextile fabric and approximately six-inches of topsoil that was subsequently seeded. A six-foot high chain-link fence with a locked gate was also installed to limit access to the southwest area of the Site where elevated concentrations of PCB-contaminated soil are located.

5.3 Previous Submittals to MassDEP

A *Phase I Initial Site Assessment Report* was prepared by Metcalf & Eddy, Inc. (M&E) and submitted to MassDEP on April 17, 2003. As defined in this report, the Site was divided into sub-areas that are shown on Figure 2. These areas include the following:

- Area A – The central southern portion of the Site surrounding the area of focused PCB sampling (currently fenced off).
- Area B1 – The fifty-foot strip of land north and east of the concrete boardwalk.
- Area C1 – The middle pier, west of Area A.
- Area C2 – The southern pier – southwest of Area A.
- Area C3 – The area south of Area A extending to the property line.
- Area O – "Other" areas of the Site not included above, primarily north of Area A.

A *Phase II Comprehensive Site Assessment Report (CSA) and Phase III Remedial Action Plan (RAP)* were prepared by ESS and submitted to the MassDEP on January 19, 2006. This report provides a summary of the investigative work completed at the Site, including sampling results, boring logs, and Site plans. Remedial Action Alternatives (RAA) were also discussed in this report, involving the excavation of contaminated material and off-Site management options compared to on-Site treatment.

A *Revised Phase III RAP and Phase IV Remedy Implementation Plan (RIP)* were submitted to the MassDEP by ESS on January 19, 2007. The remedial goal was to prevent direct exposure to OHM-impacted soil, thereby achieving a condition of No Substantial Hazard. Three RAAs were evaluated to address the issue of PCB contamination. Two of these options involved excavating the soil containing PCBs greater than 100 ppm, and either using on-Site thermal desorption technologies or disposing the contaminated material at an appropriate facility. The third option involved inspection and maintenance of existing covers to prevent direct exposure to the OHM-impacted soils and achieve a status of No Substantial Hazard. These

alternatives are further described in the *Revised Phase III Remedial Action Plan (RAP) and Phase IV Remedy Implementation Plan* (ESS, 2007).

Based upon the alternatives evaluated at that time, it was determined that the first two alternatives were too costly and the third option was not a long term solution that would allow for development of the Site. Therefore, none of the alternatives were considered feasible and a temporary solution was implemented as described below.

5.4 Response Actions

The Phase IV RIP prepared by ESS (January 19, 2007) described temporary measures to stabilize the Site. The goal of these measures was to maintain a condition of No Substantial Hazard at the Site by preventing direct exposure to PCB-impacted soil. These measures involved inspection and maintenance of the existing cover materials. Cover materials include a geotextile fabric and 6 inches of topsoil placed over area B1 during Immediate Response Action activities, and approximately 1 foot of gravel placed over areas A and C1 during former contractor staging activities (see Figure 2). Semi-annual Site inspections were performed to confirm that the existing covers remain effective at preventing exposure, and to ensure that a condition of No Substantial Hazard is maintained at the Site.

5.5 ESS Remedial Actions

ESS conducted an initial Site inspection and collected confirmatory samples on July 24 and 25, 2007 to determine what cover maintenance activities would be required in order to meet the performance requirements established in the RIP. A summary of each area investigated is given below, as described in a letter from ESS to Mr. Fiola, as a representative for the FRRA, dated September 24, 2007.

Area A – Southwest of Concrete Boardwalk and East of Gated Access

1. "Significant" erosion (erosion greater than six inches in depth, as defined by the RIP) was observed in two locations. One location was approximately two feet by five feet in area and two feet deep and was located approximately 20 feet south of the southwest corner of the asphalt driveway in Area A. The other location was approximately 6 feet by 24 feet and approximately one foot deep and located along the bulkhead southeast of sample location CSA-101.
2. Several cracks larger than 1/8-inch wide and one foot long were observed in the asphalt driveway located in Area A.
3. Area A cover was inspected at 14 locations. A soil sample was collected from each location and analyzed for PCBs. Laboratory analytical results indicated that PCBs were not detected at a concentration greater than 58 ppm in Area A. Therefore, no cover maintenance, beyond what was noted in Items 1 and 2 above, were deemed to be required to isolate PCBs in Area A.

Area B1 – Grassed Area East of Concrete Boardwalk

1. The Area B1 cover was inspected at 12 locations. Based on these inspections, Area B1 was determined to be underlain by a geotextile fabric and the grass is in good condition. The average topsoil thickness of Area B1 was observed to be six inches thick. No cover maintenance activities were deemed to be required in Area B1.

Area C1 – West of Area A, Extending Toward Taunton River

1. The Area C1 cover was inspected at 16 locations. A soil sample was collected from each location and analyzed for PCBs. Laboratory analytical results indicated that PCBs were detected in three soil samples at a concentration greater than 58 ppm.

Throughout all inspection activities, personnel and equipment were prevented from contacting PCB-impacted soil to the extent practicable. Personnel and equipment decontamination procedures were performed in accordance with 40 CFR 791.79 when PCB-impacted soil was contacted.

5.6 Supplemental BETA Activities

BETA was retained by the FRRA on October 6, 2008. During BETA's site inspection on December 18, 2008, substantial erosion was observed at multiple locations along the sea wall and also on the surface of the pier. In order to restore these areas, two types of repairs were conducted to help stabilize both the seawall and surface cover.

BETA submitted a Request for Determination of Applicability (RDA) to the City of Fall River Conservation Commission (ConComm) on December 30, 2008. A notice of Negative Determination followed, indicating that no further action under the Wetlands Protection Act was required prior to implementation of the proposed stabilization measures.

Seawall and Surface Cover Repairs

Absorption Technologies, Inc. (ATI) of Wrentham, MA was retained to perform two types of repairs to fix both the seawall and surface cover. Representatives from ATI and BETA were on-Site between February 27, 2009 and March 6, 2009 to complete the erosion control measures described below.

Prior to the start of site excavation, ATI installed upgradient erosion control measures, surrounding the limits of work in order to limit surface water runoff during implementation of Site stabilization measures. On February 25, 2009, a silt curtain was installed along the sea wall in the Taunton River, extending approximately ten

feet beyond the active limit of work to significantly eliminate the migration of any silt laden water runoff into the river during implementation of repairs.

Seawall repairs were implemented using existing on-site granite blocks. Where erosion had occurred, the back side of the seawall was excavated and lined with Type IV filter fabric. The excavated area was then backfilled with the excavated soil. The surface of the backfilled areas was then covered with approximately three inches of 1½ inch crushed stone, followed by 12-18 inches of dumped rip rap to an -elevation slightly above adjacent surface grade.

Cover Inspections

On October 8, 2009, May 11, 2010, and November 18, 2010, a representative from BETA was on-Site to perform inspections of the repairs performed on the seawall and surface cover, in accordance with the Phase IV RIP dated January 19, 2007. These semi-annual Site inspections were conducted to determine if the cover locations and fence meet the performance standards set forth in the RIP. These standards were established to prevent direct contact with or disturbance of PCB-impacted soil located at the Site until a permanent solution is achieved.

The inspections consisted of a Site walk around the entire property, with a visual inspection of the areas where repairs were made between February 26, 2009 and March 5, 2009. Specifically, the inspections focused on identifying any areas showing signs of erosion, lack of vegetation where vegetation is required, and/or deficiencies in the fence that restricts access along the southern portion of the Site.

October 8, 2009

According to observations made on the October 8, 2009 inspection, all areas repaired in late February and early March 2009 were in good condition. No signs of erosion were noted along the seawall or on the soil cap, and vegetation was present in all required areas. The fence was also inspected, with no deficiencies or unintended access points identified.

May 11, 2010

During the final Phase IV Site inspection, some signs of undermining along the seawall were noted; however, these are not located near areas of PCB contamination. In one location, the geotextile fabric is visible on the southern side of one of the piers. Additional stone will be added to bring these areas up to existing grade. No other signs of erosion were noted along the soil cap, and vegetation was present in all required areas.

Documentation of Site conditions at the time of the final Phase IV inspection are included in the *Phase IV Status Report, Final Inspection Report, and Completion Statement* dated May 20, 2010. According to the inspection report, no major changes in the condition of the cover repair locations were visible. The fence was also

inspected, with no deficiencies or unintended access points were identified. Based on these observations, conditions at the Site remain acceptable under the cover performance standards established in the RIP, and no substantial hazards were found to exist at the Site.

November 18, 2010

According to observations made on the November 18, 2010 inspection, the temporary caps were all in good condition. No signs of erosion were noted along the seawall or on the soil cap, and vegetation was present in all required areas. The fence was also inspected, with no deficiencies or unintended access points identified.

6.0 Supplemental Soil Investigation

In October 2010, BETA submitted a Risk-Based TSCA Work Plan to EPA outlining proposed activities to conduct a supplemental soil investigation at the site. Previous investigations of PCB impacted soil at the site had focused on distinct areas and had not delineated the distribution of PCBs for the entire site. To determine the distribution of PCBs across the Site, BETA established a 20-foot sampling grid as shown on Figure 3. In locations where historical sampling results coincided with the proposed sampling points the historical data was incorporated into the sampling grid in order to limit duplication of previous efforts. Prior to commencing sampling activities, SMC Survey of Braintree, Massachusetts marked the 20-foot sampling grid across the site. The 20-foot grid established reproducible points at each sampling location to aid in the proposed PCB remedial action. The following summarizes the soil borings and analytical results from the laboratory analysis.

6.1 Soil Borings

BETA oversaw the advancement of a total of 424 soil boring over the course of eight days (see below for drilling dates). All drilling activities were completed by New Hampshire Boring of Brockton, Massachusetts using a track-mounted geoprobe drilling unit. Soil samples from grade to borings end (either two or three feet below grade) were collected at each boring during drilling operations using dedicated disposable liners. Soil boring locations are depicted on Figure 3. The dates of drilling activities were as follows.

- November 3, 2010
- November 4, 2010
- November 5, 2010
- November 9, 2010
- November 10, 2010

- November 11, 2010
- November 12, 2010
- November 15, 2010

PCB Samples

As outlined in the work plan, samples for PCB analysis were collected in one foot intervals from 0-1 and 1-2 feet below grade at each sampling point. Samples from a depth of 2-3 feet below grade were collected at each point from Davol Street to approximately 120 feet west of Davol Street. This area is at a higher elevation than the remainder of the Site. A minimum of 50 percent soil recovery was required in order for a soil sample to be considered valid. Valid samples were divided into equal parts and sampled for the specified depth interval. If soil recovery was less than 50 percent, an additional boring was completed adjacent to the original boring location. A minimum of three attempts was completed prior to abandoning the sample location and moving on to the next sample location.

Samples could not be collected at locations 3-A and 21-I due to no recovery after three attempts. The 1-2 foot samples at 2-A, 24-A, 19-I, 20-I, 19-L, 21-L, and 17-M samples were also not collected due to limited recovery after three attempts.

Disposal Samples

In order to pre-characterize soil for off-site disposal in areas with known PCB levels exceeding the MassDEP Upper Concentration Limit (UCL), BETA collected composite soil samples for analysis of disposal parameters. Discrete soil samples were collected from pre-determined points on the 20-foot grid and field screened for the presence of total volatile organic compounds (TVOCs) using a Thermo Environmental photoionization detector (PID) calibrated to measure TVOCs as benzene in parts per million by volume (ppm_v). The headspace reading for the soil sample from boring 4-H was 1.0 ppm_v. No other elevated PID readings were measured. Grab samples for the VOC samples were collected from the discrete soil samples based on elevated PID readings or randomly selected if no TVOCs were measured. The composite samples consisted of the following combined discrete samples:

- Comp – 1: 2-E, 3-E, 4-3, 2-F, and 3-F;
- Comp – 2: 6-F, 4-G, 5-G, 6-G, 4-H, and 5-I;
- Comp – 3: 7-E, 8-E, 9-E, 9-F, and 8-G;
- Comp – 4: 11-E, 13-E, 10-F, 12-F, 13-F, 11-G, and 12-G;
- Comp – 5: 10-H, 11-H, 11-I, and 12-J;
- Comp – 6: 14-H, 13-I, 14-I, 13-J, and 13-H;
- Comp – 7: 17-I, 18-I, 19-I, 17-J, 17-K, 18-K, and 19-K;

- Comp – 8: 25-I, 26-I, 27-I, 25-J, 27-J, 25-K, 26-K, and 27-K;
- Comp – 9: 2-J, 3-J, 4-J, 2-K, 4-K, 2-L, and 3-L;
- Comp – 10: 2-N, 3-N, 4-N, 2-O, 4-O, 2-P, 3-P, and 4-P; and,
- Comp – 11: 3-T, 4-T, 3-U, 2-V, 3-V, and 4-V.

6.2 Soil Analytical Data

PCB Samples

Each sample collected was submitted to Alpha Analytical of Westborough, Massachusetts for analysis of PCBs by EPA Method 8082. Initially, each of the 0-1 foot samples were analyzed for PCBs. The 1-2 foot and 2-3 foot samples were frozen and held pending the results of the 0-1 foot samples. At each of the 0-1 foot sample locations where PCBs were detected above 1.0 ppm the corresponding 1-2 foot sample was analyzed for PCBs. Then, for any of the 1-2 foot samples where PCBs were detected above 1.0 ppm the 2-3 foot sample was analyzed for PCBs. The results for the PCB analyses are shown in Tables 1, 2, and 3. The location of each sample point is depicted on Figures 4, 5, and 6.

As can be seen in Tables 1, 2, and 3, the results ranged from below the laboratory detection limit to 474 milligrams per kilogram (mg/kg). From the 0-1 foot samples, 124 samples exceeded 1 ppm and six exceeded 100 ppm. From the 1-2 foot samples, 52 exceeded 1 ppm and one exceeded 100 ppm. From the 2-3 foot samples, six exceeded 1 ppm and none exceeded 100 ppm.

As presented in the work plan, one duplicate sample, one matrix spike, and one matrix spike duplicate were submitted in conjunction with each set of 20 samples submitted for PCB analysis. The results from these analyses were evaluated as part of the data validation discussed below. Also, as required by the sampling plan a review of the field notes was completed. The purpose of this review is to determine if any non-representative or non-homogeneous samples had been submitted for laboratory analysis since these samples would have an increased potential for false positive or false negative results. The review of the field notes confirmed that the samples submitted for laboratory analysis were representative of site conditions and conformed to the sampling protocols presented in the work plan.

Disposal Samples

Comp-1, Comp-2, Comp-3, Comp-4, Comp-5, Comp-6, Comp-7, Comp-8, Comp-9, Comp-10, and Comp-11 were submitted for analysis of VOCs by EPA Method 8260, SVOCs by EPA Method 8270, PCBs by EPA Method 8082, pesticides by EPA Method 8081, herbicides by EPA Method 8151, and Total Metals by various EPA methods. Table 4 summarizes the detected compounds from these analyses and Appendix A contains the laboratory certificates of analysis. Six of the composite samples, Comp-1, Comp-2, Comp-3, Comp-4, Comp-6, and Comp-8, had lead concentrations that exceed

the 20 times rule limit (100 mg/kg). As a result the six samples were tested for toxicity characteristic leaching procedure (TCLP) lead. The TCLP lead results were all below the EPA hazardous waste standard (5 mg/L).

As presented in the work plan, one VOC trip blank was submitted in conjunction with each set of samples submitted for VOCs analysis. The trip blank for Comp-1, Comp-2, and Comp-3 was inadvertently not submitted as prescribed. As a result three VOC samples from the same locations were submitted under a new chain with the required VOC trip blank. No VOCs were detected in any of the trip blanks submitted.

6.3 Data Validation

Wilcox and Barton (W&B) conducted a modified Tier II data validation assessment of the chemical analytical data. This assessment included a general review of sample receipt, analysis, and the ability of the instruments to recover the elements or compounds that were analyzed. W&B concluded that "the data for the site are usable for their intended purpose of site characterization." W&B also stated, "No unusual trends or anomalies were noted in the data, no significant analytical gaps were identified, and no gross failures in sample handling, storage, preservation, or analysis occurred." Appendix B contains W&B's data validation report.

6.4 Immediate Response Action

As part of the supplemental soil investigation, BETA collected over 200 soil samples from the 0-1 foot strata at the site that were within 500 feet of the adjacent (to the north) Gloria Point Condominium building. Of these samples, one (10Z) contained PCBs above the Imminent Hazard (IH) threshold of 10 mg/kg established by MassDEP at 310 CMR 40.0321(2)(b). The 10Z sample contained 13.6 mg/kg of PCBs. Figure 4 attached depicts the sample location.

On November 30, 2010, within the applicable two hours of FROED being informed of the IH condition, BETA notified MassDEP of this condition. Mr. Daniel Crafton of MassDEP approved an IRA consisting of a temporary soil cover over the 10Z sample location to prevent Site visitors from being exposed to the PCB-containing soil. The temporary cover, constructed on February 25, 2011, consists of a 10-foot by 10-foot area of 12-inches of gravel topped by 6-inches of stone rip-rap centered on the sample location. A filter fabric was placed on the ground surface beneath the cover to provide a marker for future excavation of the PCB-impacted soils in this area. Soils from this area will be removed and consolidated to within the proposed cap area (see Section 9).

7.0 Nature and Extent of PCBs

Historical PCB Sampling

Historically, PCB samples were collected in targeted areas at depths ranging between 0 and 12 feet below ground surface. Historical sampling locations are also depicted on Figure 3. The historical concentrations of PCBs in soil were divided into five categories: soil containing PCBs less than 1 mg/kg, soil containing PCBs greater than 1 mg/kg but less than 10 mg/kg, soil containing PCBs greater than 10 mg/kg but less than 50 mg/kg, soil containing PCBs greater than 50 mg/kg but less than 100 mg/kg, and soil containing PCBs greater than 100 mg/kg. The areas of highest PCB concentrations are primarily located in the southeast portion of the Site. Other isolated areas of PCB impact were identified throughout the Site.

BETA PCB Sampling

The site investigations performed by previous consultants were mainly focused on discrete portions of the Site. Since these former assessment programs did not cover the entire Site, BETA conducted a Site-wide soil assessment program to delineate the extent of the PCB contamination. Results from this comprehensive sampling program were used in conjunction with the data previously collected in order to determine the extent of PCB contamination on Site.

The PCB sampling conducted by BETA consisted of a 20-foot alpha-numeric grid system (pre-determined in conjunction with EPA) encompassing the entire site. A licensed surveyor staked the majority of the sample locations and the remaining points were established utilizing the sample points staked by the surveyor. The samples were identified based on their location on the grid system and the depth from which they are collected. All sample locations and identifications are shown on Figure 3 so that they can be re-established when required.

A horizontal cleanup goal of 1 ppm PCBs in soil has been established for the Site. At each sampling point on the 20-foot grid (excluding locations with historic data), samples were collected from 0-1 foot and 1-2 foot depths, measured from the ground surface. At higher elevations on the site, 2-3 foot depth samples were also collected. The laboratory analyzed all 0-1 foot samples for PCBs. The 1-2 and 2-3 foot samples were frozen by the laboratory to suspend the hold time requirements of the analytical method. For 0-1 foot soil samples that exceeded the 1 ppm site specific clean up standard the 1-2 foot sample was analyzed for PCBs. The 1-2 foot samples that exceeded the 1 ppm limit and had a corresponding 2-3 foot sample were also analyzed for PCBs. The sample results are shown in Tables 1, 2, and 3. Sample results, including historical sampling data, are depicted on Figures 4, 5, and 6.

The sampling results show that the majority of the PCB contamination is concentrated within the fenced portion of the site. The first sixty feet starting at the southern end of the site had PCB levels ranging from non-detect to 2.49 ppm with only three detections above 1 ppm. The remaining fenced portion of the site, including the central pier in area A, had PCB levels ranging from non-detect to 474 ppm. Results in this area correlate with historical sampling which had a maximum PCB concentration of 3,250 ppm at one sample location. Outside of the fenced area PCB levels ranged from non-detect to 30.5 ppm. While BETA did not encounter any PCB levels above 100 ppm outside the fenced area, there are four historical sampling points outside the fenced area that are over 100 ppm.

8.0 Risk Characterization

W&B conducted an evaluation of the proposed measures to mitigate the risk at the Site due to the presence of PCBs in the Site soils. W&B concluded that the proposed cleanup strategy (removal of soils with greater than 100 ppm of PCBs, construction of clean utility corridors, construction of an engineered barrier as defined by MassDEP, and the implementation of an AUL on the Site deed) will "ensure that the site poses No Significant Risk to human health, safety, public welfare, or the environment." Appendix C contains a copy of W&B's report.

9.0 Proposed Remedial Actions

The following sections provide detailed descriptions of the proposed remedial actions at the Site. These actions include removal of soils with greater than 100 ppm of PCBs, on-site consolidation of soils greater than 1 ppm to within the proposed cap area, construction of an engineered barrier with clean utility corridor(s) as defined by MassDEP, and the implementation of an AUL on the Site deed.

9.1 Off-Site Management of Soils

Both historical sampling and BETA's assessment programs have identified PCBs concentrations ≥50 ppm in multiple soil locations across the Site. Based on these results, the PCB-contaminated materials currently located at the Site meet the definition of PCB remediation wastes, which are regulated under the TSCA and the PCB regulations at 40 CFR Part 761. The PCB regulations require disposal of PCB remediation waste ≥50 ppm in a TSCA-permitted disposal facility or a Resource Conservation and Recovery Act (RCRA) hazardous waste landfill. The historic and recent soil (samples that exceed the MassDEP's UCL for PCBs ≥100 ppm in soil) will be removed and disposed of at a TSCA-permitted facility. PCB remediation waste <50 ppm will be disposed of in a state-approved non-hazardous waste landfill if offsite disposal is required.

As shown in Tables 1, 2, and 3 there is a total of 23 locations with PCB concentrations at varying depths exceeding 100 ppm. At each location, a 10 foot by 10 foot area centered on the sample point will be excavated to the specified depth and containerized for off-site disposal. Confirmatory samples, four sidewall and one bottom of hole, will be collected from each location. Preliminary estimates show that approximately 200 cubic yards of soil will require off-site disposal. If confirmatory sampling locations exhibit PCB concentrations exceeding the 100 ppm UCL then off-site management of additional soil will be required.

9.2 On-Site Consolidation of Soils

In order to minimize the area subject to the AUL, soils with PCB concentrations greater than 1 ppm in the southern pier area and the northern portion of the Site will be excavated and consolidated to within the proposed cap area (see Figure 7). As shown in Tables 1, 2, and 3 there is a total of 57 locations with PCB concentrations at varying depths exceeding 1 ppm. At each location, a 10 foot by 10 foot area centered on the sample point will be excavated to the specified depth and containerized for offsite disposal. Confirmatory samples, four sidewall and one bottom of hole, will be collected from each location. Preliminary estimates show that approximately 215 cubic yards of soil will be consolidated within the proposed cap area. If confirmatory sampling locations exhibit PCB concentrations exceeding 1 ppm then additional soil will be excavated and consolidated to within the proposed cap area.

If the soil from these areas cannot be placed under the proposed engineered barrier (see below) off-site disposal may be required. As previously stated, soil with PCBs ≥50 ppm in soil will be removed and disposed of at a TSCA-permitted facility. PCB remediation waste <50 ppm will be disposed of in a state-approved non-hazardous waste landfill if off-site disposal is required.

9.3 Engineered Barrier

In areas where soils with greater than 1 ppm of PCBs remains at the Site, the following engineering controls (exposure management barriers) will be implemented during or subsequent to construction activities:

9.3.1 Paved and Concrete Areas

In order to prevent direct exposure to soils at the Site containing greater than 1 ppm of PCBs, BETA has delineated a proposed cap area that covers the area just north of the southern pier to the northern edge of the middle pier and runs from Davol Street to the east to the Taunton River to the west (see Figure 7). Within the cap area, fill material (gravel, stone, asphalt, concrete, etc.) will be added to the current Site elevation to create a total of two feet of separation between the new paved or concrete surface and the remaining PCB-impacted soils in the following manner:

- Separation geotextile will be placed over the existing site soils to provide a demarcation between and mixing of clean and PCB-containing soils;
- A minimum of 12-inches of granular material will be placed over the separation geotextile;
- 6-inches of crushed stone will be placed over the granular material; and,
- A minimum of 6-inches of pavement or concrete will be placed over the crushed stone.

9.3.2 Seawall Repairs

In order to facilitate the raising of the Site grade by two feet within the proposed cap area, the existing seawalls will require repair with inshore support system. Appendix D contains the October 2010 Seawall Inspection and Evaluation report that documents the current condition of the seawalls the proposed repair work. The repair will require that the Site grade remain as is within 15 feet of the existing seawalls and thus requires excavation and off-site disposal of soils to a depth of 2 feet (in paved or concrete areas) or 3 feet (in landscape areas) within this 15 foot zone. During construction of the inshore support system, workers may be exposed to PCB contaminated soil which will be used as backfill to all extents possible. Worker health and safety will be evaluated and protected using standard personal protective equipment and other appropriate safeguards.

9.3.3 Utility Corridors

Clean utility corridors will be created to prevent exposure of future construction or utility workers to fill material remaining at the Site. In these corridors, fill will be removed to a depth of one foot below the bottom of the proposed utility conduit. The PCB-containing soils will be properly disposed off-Site in accordance with applicable state and federal regulations. As outlined in the preceding sections, a geotextile fabric will be placed over existing soils and the utility corridor will be filled with clean granular material. As previously stated, soil with PCBs ≥50 ppm in soil will be removed and disposed of at a TSCA-permitted facility. PCB remediation waste <50 ppm will be disposed of in a state-approved non-hazardous waste landfill if off-site disposal is required. Figure 7 depicts the anticipated utility corridors.

9.3.4 Landscaped Areas

Within the proposed cap area, minimal landscaped areas have been proposed to limit the additional removal of PCB-impacted soils. However, where landscaped areas are proposed within the cap area (see Figure 7) fill material will be removed as necessary to make room for three feet of separation between final grade and the remaining PCB-impacted soils in the following manner:

- Separation geotextile will be placed over the remaining fill;
- A 12-inch +/- layer of granular material will be placed over the separation geotextile;
- Warning barrier will be placed;
- A 2-foot +/- layer of granular material will be placed over the warning barrier to create a minimum total of 3-feet of granular material over the separation fabric; and,
- Landscaping will be established over the granular material.

9.3.5 Embankment

Embankments (edges of fill material) will be stabilized at a slope of 2:1 with three feet of clean soil overlying in-place contaminated material. The same geotextile fabric and warning barrier described above will be installed at all of the stabilized embankment areas.

9.3.6 Building Footprint

Future development of the Site may include the construction of a building within the cap area. Any building(s) or structures within the cap area should be constructed on a slab-on-grade foundation in the following manner:

- Separation geotextile will be placed over the remaining fill;
- A minimum of 12-inches of granular material will be placed over the separation geotextile;
- 6-inches of crushed stone will be placed over the granular material; and,
- A minimum of 6-inches of concrete will be placed over the crushed stone.

If footings or other structural supports that extend to greater depths, removal of PCB-impacted soils may be required. If this work is conducted after the filing of the deed restriction for the Site (see below), then the work would require the oversight of an LSP to comply with the provisions of the AUL.

9.3.7 Clean Fill Testing

Clean fill will be tested prior to being brought to the Site. Testing frequency will be a minimum of one sample per 500 cubic yards of material and analytical requirements will, at a minimum, consist of PCBs, SVOCs, metals, VOCs, and petroleum constituents. However, the actual analytical testing frequency and requirements may be modified depending on the source of the material.

9.3.8 Long-term Monitoring and Maintenance

A Long-term Cap Monitoring Plan is included as Appendix E.

9.4 Deed Restriction

An Activity and Use Limitation (AUL) will be placed on the property to require maintenance of paved surfaces and landscaped areas discussed above and to prevent penetration of these features without the oversight by a Massachusetts Licensed Site Professional (LSP). A Draft AUL is included as Appendix F.

10.0 Summary and Conclusions

Historic and recent investigations at the Site have delineated the nature and extent of PCB-impacted soils at the Site. BETA has designed this Risk-Based Cleanup Plan to allow for the filing of a Response Action Outcome under the Massachusetts Contingency Plan and to request approval for a risk-based cleanup under TSCA. The response actions proposed include removal of soils with greater than 100 ppm of PCBs, on-site consolidation of soils greater than 1 ppm to within the proposed cap area, construction of an engineered barrier with clean utility corridor(s) as defined by MassDEP, and the implementation of an AUL on the Site deed.

Tables

0-1 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Sample Date	Result (mg/kg)
2	A	0-1	PCBs	11/3/2010	ND
4	A	0-1	PCBs	11/3/2010	0.363
5	A	0-1	PCBs	11/3/2010	0.227
6	A	0-1	PCBs	11/3/2010	ND
7	A	0-1	PCBs	11/3/2010	ND
8	A	0-1	PCBs	11/3/2010	ND
9	A	0-1	PCBs	11/3/2010	ND
10	A	0-1	PCBs	11/3/2010	0.257
11	A	0-1	PCBs	11/3/2010	0.581
12	A	0-1	PCBs	11/3/2010	ND
13	A	0-1	PCBs	11/3/2010	0.334
14	A	0-1	PCBs	11/3/2010	0.266
17	A	0-1	PCBs	11/3/2010	ND
18	A	0-1	PCBs	11/3/2010	ND
19	A	0-1	PCBs	11/3/2010	ND
20	A	0-1	PCBs	11/3/2010	ND
21	A	0-1	PCBs	11/3/2010	0.095
22	A	0-1	PCBs	11/3/2010	0.037
23	A	0-1	PCBs	11/3/2010	0.083
24	A	0-1	PCBs	11/3/2010	ND
3	AA	0-1	PCBs	11/11/2010	ND
4	AA	0-1	PCBs	11/11/2010	ND
5	AA	0-1	PCBs	11/11/2010	0.263
7	AA	0-1	PCBs	11/11/2010	ND
8	AA	0-1	PCBs	11/12/2010	ND
10	AA	0-1	PCBs	11/12/2010	ND
11	AA	0-1	PCBs	11/12/2010	0.375
12	AA	0-1	PCBs	11/12/2010	0.135
13	AA	0-1	PCBs	11/12/2010	0.354
14	AA	0-1	PCBs	11/15/2010	0.365
3	B	0-1	PCBs	11/3/2010	0.194
4	B	0-1	PCBs	11/3/2010	0.299
11	B	0-1	PCBs	11/3/2010	0.115
12	B	0-1	PCBs	11/3/2010	0.184
13	B	0-1	PCBs	11/3/2010	ND
14	B	0-1	PCBs	11/3/2010	0.169
15	B	0-1	PCBs	11/3/2010	1.17
16	B	0-1	PCBs	11/3/2010	0.190
17	B	0-1	PCBs	11/3/2010	ND
18	B	0-1	PCBs	11/3/2010	ND
19	B	0-1	PCBs	11/3/2010	ND
20	B	0-1	PCBs	11/3/2010	0.172
21	B	0-1	PCBs	11/3/2010	ND
22	B	0-1	PCBs	11/3/2010	ND
23	B	0-1	PCBs	11/3/2010	ND
24	B	0-1	PCBs	11/3/2010	ND
25	B	0-1	PCBs	11/3/2010	ND
3	BB	0-1	PCBs	11/11/2010	0.037
4	BB	0-1	PCBs	11/11/2010	ND
5	BB	0-1	PCBs	11/11/2010	0.203

0-1 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Sample Date	Result (mg/kg)
6	BB	0-1	PCBs	11/11/2010	0.090
7	BB	0-1	PCBs	11/11/2010	1.72
8	BB	0-1	PCBs	11/12/2010	0.042
9	BB	0-1	PCBs	11/12/2010	0.106
10	BB	0-1	PCBs	11/12/2010	0.521
11	BB	0-1	PCBs	11/12/2010	0.140
12	BB	0-1	PCBs	11/12/2010	0.757
13	BB	0-1	PCBs	11/12/2010	ND
1	C	0-1	PCBs	11/4/2010	0.286
2	C	0-1	PCBs	11/4/2010	ND
3	C	0-1	PCBs	11/4/2010	ND
4	C	0-1	PCBs	11/4/2010	ND
5	C	0-1	PCBs	11/4/2010	ND
6	C	0-1	PCBs	11/4/2010	ND
7	C	0-1	PCBs	11/4/2010	2.49
8	C	0-1	PCBs	11/4/2010	0.433
9	C	0-1	PCBs	11/4/2010	1.10
10	C	0-1	PCBs	11/4/2010	0.147
11	C	0-1	PCBs	11/4/2010	0.854
12	C	0-1	PCBs	11/4/2010	2.11
13	C	0-1	PCBs	11/4/2010	0.667
14	C	0-1	PCBs	11/4/2010	0.033
15	C	0-1	PCBs	11/4/2010	ND
17	C	0-1	PCBs	11/4/2010	ND
18	C	0-1	PCBs	11/4/2010	0.589
19	C	0-1	PCBs	11/4/2010	0.271
20	C	0-1	PCBs	11/4/2010	0.084
21	C	0-1	PCBs	11/4/2010	ND
23	C	0-1	PCBs	11/4/2010	ND
24	C	0-1	PCBs	11/4/2010	ND
25	C	0-1	PCBs	11/3/2010	ND
3	CC	0-1	PCBs	11/11/2010	ND
4	CC	0-1	PCBs	11/11/2010	ND
5	CC	0-1	PCBs	11/11/2010	ND
8	CC	0-1	PCBs	11/12/2010	0.049
9	CC	0-1	PCBs	11/12/2010	ND
10	CC	0-1	PCBs	11/12/2010	0.364
1	D	0-1	PCBs	11/4/2010	ND
2	D	0-1	PCBs	11/4/2010	ND
3	D	0-1	PCBs	11/4/2010	ND
4	D	0-1	PCBs	11/4/2010	ND
5	D	0-1	PCBs	11/4/2010	6.87
6	D	0-1	PCBs	11/4/2010	16.4
7	D	0-1	PCBs	11/4/2010	ND
9	D	0-1	PCBs	11/4/2010	9.64
10	D	0-1	PCBs	11/4/2010	22.5
11	D	0-1	PCBs	11/4/2010	ND
11	D	0-1	PCBs	11/4/2010	ND
12	D	0-1	PCBs	11/4/2010	25.6
13	D	0-1	PCBs	11/4/2010	ND

0-1 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Sample Date	Result (mg/kg)
14	D	0-1	PCBs	11/4/2010	0.323
15	D	0-1	PCBs	11/4/2010	ND
3	DD	0-1	PCBs	11/11/2010	ND
4	DD	0-1	PCBs	11/11/2010	ND
5	DD	0-1	PCBs	11/11/2010	0.334
6	DD	0-1	PCBs	11/11/2010	0.138
7	DD	0-1	PCBs	11/11/2010	ND
8	DD	0-1	PCBs	11/12/2010	ND
9	DD	0-1	PCBs	11/12/2010	0.122
10	DD	0-1	PCBs	11/12/2010	0.040
11	DD	0-1	PCBs	11/12/2010	0.208
12	DD	0-1	PCBs	11/12/2010	0.192
13	DD	0-1	PCBs	11/12/2010	ND
2	E	0-1	PCBs	11/4/2010	1.04
3	E	0-1	PCBs	11/4/2010	3.36
4	E	0-1	PCBs	11/4/2010	2.99
5	E	0-1	PCBs	11/4/2010	3.50
7	E	0-1	PCBs	11/4/2010	1.64
8	E	0-1	PCBs	11/4/2010	2.50
9	E	0-1	PCBs	11/4/2010	3.82
11	E	0-1	PCBs	11/4/2010	5.16
13	E	0-1	PCBs	11/4/2010	24.0
14	E	0-1	PCBs	11/4/2010	ND
15	E	0-1	PCBs	11/4/2010	ND
3	EE	0-1	PCBs	11/11/2010	ND
4	EE	0-1	PCBs	11/11/2010	ND
5	EE	0-1	PCBs	11/11/2010	0.285
6	EE	0-1	PCBs	11/11/2010	0.072
7	EE	0-1	PCBs	11/11/2010	ND
9	EE	0-1	PCBs	11/12/2010	0.907
10	EE	0-1	PCBs	11/12/2010	0.290
12	EE	0-1	PCBs	11/12/2010	0.769
13	EE	0-1	PCBs	11/12/2010	ND
6	F	0-1	PCBs	11/4/2010	201
9	F	0-1	PCBs	11/5/2010	2.53
10	F	0-1	PCBs	11/4/2010	0.197
13	F	0-1	PCBs	11/4/2010	4.95
15	F	0-1	PCBs	11/4/2010	0.906
3	FF	0-1	PCBs	11/11/2010	ND
4	FF	0-1	PCBs	11/11/2010	ND
5	FF	0-1	PCBs	11/11/2010	ND
6	FF	0-1	PCBs	11/11/2010	0.529
7	FF	0-1	PCBs	11/11/2010	ND
8	FF	0-1	PCBs	11/12/2010	ND
10	FF	0-1	PCBs	11/12/2010	ND
11	FF	0-1	PCBs	11/12/2010	0.515
12	FF	0-1	PCBs	11/12/2010	0.156
6	G	0-1	PCBs	11/5/2010	48.8
7	G	0-1	PCBs	11/5/2010	11.1
8	G	0-1	PCBs	11/5/2010	0.672

0-1 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Sample Date	Result (mg/kg)
11	G	0-1	PCBs	11/5/2010	0.141
15	G	0-1	PCBs	11/5/2010	ND
3	GG	0-1	PCBs	11/11/2010	ND
4	GG	0-1	PCBs	11/11/2010	ND
5	GG	0-1	PCBs	11/11/2010	ND
6	GG	0-1	PCBs	11/11/2010	0.349
7	GG	0-1	PCBs	11/11/2010	ND
8	GG	0-1	PCBs	11/12/2010	0.071
9	GG	0-1	PCBs	11/12/2010	0.057
10	GG	0-1	PCBs	11/12/2010	0.386
11	GG	0-1	PCBs	11/12/2010	0.622
12	GG	0-1	PCBs	11/12/2010	0.073
13	GG	0-1	PCBs	11/12/2010	0.089
14	GG	0-1	PCBs	11/12/2010	0.213
11	H	0-1	PCBs	11/5/2010	1.73
14	H	0-1	PCBs	11/5/2010	8.56
15	H	0-1	PCBs	11/5/2010	2.54
3	HH	0-1	PCBs	11/11/2010	ND
4	HH	0-1	PCBs	11/11/2010	ND
5	HH	0-1	PCBs	11/11/2010	0.115
6	HH	0-1	PCBs	11/11/2010	ND
6	HH	0-1	PCBs	11/11/2010	ND
7	HH	0-1	PCBs	11/11/2010	ND
8	HH	0-1	PCBs	11/12/2010	ND
9	HH	0-1	PCBs	11/12/2010	1.25
10	HH	0-1	PCBs	11/12/2010	0.750
12	HH	0-1	PCBs	11/12/2010	0.877
13	HH	0-1	PCBs	11/12/2010	ND
15	HH	0-1	PCBs	11/12/2010	0.154
16	HH	0-1	PCBs	11/12/2010	ND
17	HH	0-1	PCBs	11/15/2010	ND
18	HH	0-1	PCBs	11/15/2010	ND
5	I	0-1	PCBs	11/5/2010	163
6	I	0-1	PCBs	11/5/2010	19.0
7	I	0-1	PCBs	11/5/2010	0.761
11	I	0-1	PCBs	11/5/2010	0.439
13	I	0-1	PCBs	11/5/2010	1.00
14	I	0-1	PCBs	11/5/2010	0.518
15	I	0-1	PCBs	11/5/2010	0.588
16	I	0-1	PCBs	11/5/2010	ND
17	I	0-1	PCBs	11/5/2010	0.503
18	I	0-1	PCBs	11/5/2010	0.329
19	I	0-1	PCBs	11/5/2010	0.274
20	I	0-1	PCBs	11/5/2010	1.28
22	I	0-1	PCBs	11/5/2010	ND
23	I	0-1	PCBs	11/5/2010	0.472
24	I	0-1	PCBs	11/5/2010	1.32
25	I	0-1	PCBs	11/5/2010	3.09
26	I	0-1	PCBs	11/5/2010	13.1
27	I	0-1	PCBs	11/5/2010	12.7

0-1 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Sample Date	Result (mg/kg)
28	I	0-1	PCBs	11/5/2010	3.07
29	I	0-1	PCBs	11/5/2010	12.0
30	I	0-1	PCBs	11/5/2010	ND
31	I	0-1	PCBs	11/5/2010	0.957
4	II	0-1	PCBs	11/11/2010	ND
5	II	0-1	PCBs	11/11/2010	ND
6	II	0-1	PCBs	11/11/2010	ND
7	II	0-1	PCBs	11/11/2010	ND
8	II	0-1	PCBs	11/12/2010	ND
11	II	0-1	PCBs	11/12/2010	0.198
12	II	0-1	PCBs	11/12/2010	1.88
13	II	0-1	PCBs	11/12/2010	1.90
16	II	0-1	PCBs	11/15/2010	ND
17	II	0-1	PCBs	11/15/2010	ND
18	II	0-1	PCBs	11/15/2010	ND
19	II	0-1	PCBs	11/15/2010	ND
20	II	0-1	PCBs	11/12/2010	ND
22	II	0-1	PCBs	11/15/2010	ND
23	II	0-1	PCBs	11/15/2010	ND
24	II	0-1	PCBs	11/15/2010	ND
29	II	0-1	PCBs	11/15/2010	ND
31	II	0-1	PCBs	11/15/2010	ND
32	II	0-1	PCBs	11/15/2010	ND
1	J	0-1	PCBs	11/10/2010	0.149
3	J	0-1	PCBs	11/5/2010	0.495
4	J	0-1	PCBs	11/5/2010	5.00
5	J	0-1	PCBs	11/5/2010	83.3
6	J	0-1	PCBs	11/5/2010	5.92
7	J	0-1	PCBs	11/5/2010	0.752
9	J	0-1	PCBs	11/5/2010	2.07
12	J	0-1	PCBs	11/5/2010	1.18
13	J	0-1	PCBs	11/5/2010	0.671
16	J	0-1	PCBs	11/5/2010	1.54
17	J	0-1	PCBs	11/5/2010	6.83
20	J	0-1	PCBs	11/5/2010	2.63
21	J	0-1	PCBs	11/5/2010	19.6
23	J	0-1	PCBs	11/5/2010	4.42
25	J	0-1	PCBs	11/5/2010	31.8
27	J	0-1	PCBs	11/5/2010	42.8
28	J	0-1	PCBs	11/5/2010	12.1
30	J	0-1	PCBs	11/5/2010	0.224
31	J	0-1	PCBs	11/5/2010	0.905
2	J	0-1	PCBs	11/10/2010	ND
3	JJ	0-1	PCBs	11/11/2010	ND
4	JJ	0-1	PCBs	11/11/2010	ND
5	JJ	0-1	PCBs	11/11/2010	ND
6	JJ	0-1	PCBs	11/11/2010	ND
7	JJ	0-1	PCBs	11/11/2010	ND
8	JJ	0-1	PCBs	11/12/2010	ND
9	JJ	0-1	PCBs	11/12/2010	ND

0-1 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Sample Date	Result (mg/kg)
10	JJ	0-1	PCBs	11/12/2010	ND
11	JJ	0-1	PCBs	11/12/2010	ND
12	JJ	0-1	PCBs	11/12/2010	0.187
13	JJ	0-1	PCBs	11/12/2010	1.12
14	JJ	0-1	PCBs	11/15/2010	ND
15	JJ	0-1	PCBs	11/12/2010	ND
16	JJ	0-1	PCBs	11/12/2010	ND
17	JJ	0-1	PCBs	11/12/2010	ND
18	JJ	0-1	PCBs	11/15/2010	ND
19	JJ	0-1	PCBs	11/12/2010	ND
20	JJ	0-1	PCBs	11/15/2010	ND
21	JJ	0-1	PCBs	11/15/2010	ND
22	JJ	0-1	PCBs	11/15/2010	ND
23	JJ	0-1	PCBs	11/15/2010	ND
24	JJ	0-1	PCBs	11/15/2010	ND
25	JJ	0-1	PCBs	11/15/2010	0.137
26	JJ	0-1	PCBs	11/15/2010	ND
27	JJ	0-1	PCBs	11/15/2010	ND
28	JJ	0-1	PCBs	11/15/2010	ND
29	JJ	0-1	PCBs	11/15/2010	ND
30	JJ	0-1	PCBs	11/15/2010	ND
31	JJ	0-1	PCBs	11/15/2010	ND
32	JJ	0-1	PCBs	11/15/2010	ND
2	K	0-1	PCBs	11/10/2010	0.131
4	K	0-1	PCBs	11/5/2010	9.12
5	K	0-1	PCBs	11/5/2010	0.312
7	K	0-1	PCBs	11/5/2010	0.958
8	K	0-1	PCBs	11/5/2010	1.15
12	K	0-1	PCBs	11/5/2010	0.783
13	K	0-1	PCBs	11/9/2010	4.02
14	K	0-1	PCBs	11/9/2010	29.5
15	K	0-1	PCBs	11/9/2010	0.742
16	K	0-1	PCBs	11/9/2010	76.5
17	K	0-1	PCBs	11/9/2010	12.3
18	K	0-1	PCBs	11/9/2010	0.947
19	K	0-1	PCBs	11/9/2010	21.3
20	K	0-1	PCBs	11/9/2010	88.4
21	K	0-1	PCBs	11/9/2010	474
22	K	0-1	PCBs	11/9/2010	0.652
23	K	0-1	PCBs	11/9/2010	198
24	K	0-1	PCBs	11/9/2010	29.7
25	K	0-1	PCBs	11/9/2010	44.2
26	K	0-1	PCBs	11/9/2010	133
27	K	0-1	PCBs	11/9/2010	8.58
28	K	0-1	PCBs	11/9/2010	54.0
29	K	0-1	PCBs	11/9/2010	161
30	K	0-1	PCBs	11/9/2010	0.499
31	K	0-1	PCBs	11/9/2010	1.07
2	L	0-1	PCBs	11/10/2010	0.248
3	L	0-1	PCBs	11/11/2010	0.627

0-1 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Sample Date	Result (mg/kg)
8	L	0-1	PCBs	11/9/2010	21.2
9	L	0-1	PCBs	11/9/2010	28.5
10	L	0-1	PCBs	11/9/2010	7.85
11	L	0-1	PCBs	11/9/2010	0.591
12	L	0-1	PCBs	11/9/2010	0.817
13	L	0-1	PCBs	11/9/2010	0.456
15	L	0-1	PCBs	11/9/2010	2.16
16	L	0-1	PCBs	11/9/2010	1.72
18	L	0-1	PCBs	11/9/2010	28.7
19	L	0-1	PCBs	11/9/2010	7.37
20	L	0-1	PCBs	11/9/2010	51.2
21	L	0-1	PCBs	11/9/2010	1.00
23	L	0-1	PCBs	11/9/2010	54.6
24	L	0-1	PCBs	11/9/2010	6.06
25	L	0-1	PCBs	11/9/2010	6.05
26	L	0-1	PCBs	11/9/2010	21.8
27	L	0-1	PCBs	11/9/2010	7.78
30	L	0-1	PCBs	11/9/2010	1.18
31	L	0-1	PCBs	11/9/2010	0.162
13	LL	0-1	PCBs	11/12/2010	0.184
2	M	0-1	PCBs	11/10/2010	ND
3	M	0-1	PCBs	11/11/2010	4.24
4	M	0-1	PCBs	11/11/2010	ND
6	M	0-1	PCBs	11/9/2010	0.918
7	M	0-1	PCBs	11/9/2010	38.4
8	M	0-1	PCBs	11/9/2010	47.7
9	M	0-1	PCBs	11/9/2010	24.6
10	M	0-1	PCBs	11/9/2010	2.06
11	M	0-1	PCBs	11/9/2010	4.68
12	M	0-1	PCBs	11/9/2010	3.47
13	M	0-1	PCBs	11/9/2010	4.83
14	M	0-1	PCBs	11/9/2010	0.232
15	M	0-1	PCBs	11/9/2010	6.20
16	M	0-1	PCBs	11/9/2010	2.06
17	M	0-1	PCBs	11/9/2010	0.230
18	M	0-1	PCBs	11/9/2010	1.17
19	M	0-1	PCBs	11/9/2010	0.350
20	M	0-1	PCBs	11/9/2010	10.6
21	M	0-1	PCBs	11/9/2010	0.672
22	M	0-1	PCBs	11/10/2010	1.15
23	M	0-1	PCBs	11/9/2010	3.88
24	M	0-1	PCBs	11/9/2010	32.7
25	M	0-1	PCBs	11/9/2010	87.5
26	M	0-1	PCBs	11/9/2010	8.81
27	M	0-1	PCBs	11/10/2010	4.80
28	M	0-1	PCBs	11/10/2010	6.71
29	M	0-1	PCBs	11/10/2010	1.14
30	M	0-1	PCBs	11/10/2010	7.56
31	M	0-1	PCBs	11/10/2010	0.988
33	M	0-1	PCBs	11/10/2010	0.113

0-1 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Sample Date	Result (mg/kg)
2	N	0-1	PCBs	11/10/2010	ND
3	N	0-1	PCBs	11/11/2010	9.47
4	N	0-1	PCBs	11/11/2010	ND
5	N	0-1	PCBs	11/11/2010	ND
6	N	0-1	PCBs	11/11/2010	ND
33	N	0-1	PCBs	11/10/2010	ND
2	O	0-1	PCBs	11/10/2010	ND
4	O	0-1	PCBs	11/11/2010	0.059
5	O	0-1	PCBs	11/11/2010	ND
6	O	0-1	PCBs	11/11/2010	ND
33	O	0-1	PCBs	11/10/2010	ND
34	O	0-1	PCBs	11/10/2010	ND
2	P	0-1	PCBs	11/10/2010	ND
3	P	0-1	PCBs	11/10/2010	2.84
4	P	0-1	PCBs	11/11/2010	0.588
34	P	0-1	PCBs	11/10/2010	ND
2	Q	0-1	PCBs	11/10/2010	ND
3	Q	0-1	PCBs	11/11/2010	0.366
4	Q	0-1	PCBs	11/11/2010	1.45
5	Q	0-1	PCBs	11/11/2010	ND
6	Q	0-1	PCBs	11/11/2010	ND
34	Q	0-1	PCBs	11/10/2010	ND
2	R	0-1	PCBs	11/10/2010	0.266
3	R	0-1	PCBs	11/11/2010	1.16
5	R	0-1	PCBs	11/11/2010	0.038
6	R	0-1	PCBs	11/11/2010	ND
35	R	0-1	PCBs	11/10/2010	ND
2	S	0-1	PCBs	11/10/2010	ND
3	S	0-1	PCBs	11/11/2010	0.072
4	S	0-1	PCBs	11/11/2010	ND
6	S	0-1	PCBs	11/11/2010	ND
2	T	0-1	PCBs	11/10/2010	ND
3	T	0-1	PCBs	11/11/2010	1.14
4	T	0-1	PCBs	11/11/2010	0.231
2	U	0-1	PCBs	11/10/2010	ND
3	U	0-1	PCBs	11/11/2010	ND
2	V	0-1	PCBs	11/10/2010	ND
3	V	0-1	PCBs	11/11/2010	ND
4	V	0-1	PCBs	11/11/2010	0.466
5	V	0-1	PCBs	11/11/2010	0.194
6	V	0-1	PCBs	11/11/2010	ND
2	W	0-1	PCBs	11/10/2010	ND
3	W	0-1	PCBs	11/11/2010	ND
6	W	0-1	PCBs	11/11/2010	ND
14	W	0-1	PCBs	11/12/2010	ND
2	X	0-1	PCBs	11/10/2010	ND
3	X	0-1	PCBs	11/11/2010	ND
4	X	0-1	PCBs	11/11/2010	0.098
6	X	0-1	PCBs	11/11/2010	1.58
7	X	0-1	PCBs	11/11/2010	1.03

0-1 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Sample Date	Result (mg/kg)
8	X	0-1	PCBs	11/11/2010	7.95
9	X	0-1	PCBs	11/12/2010	1.50
10	X	0-1	PCBs	11/12/2010	0.611
11	X	0-1	PCBs	11/12/2010	0.129
12	X	0-1	PCBs	11/12/2010	0.040
13	X	0-1	PCBs	11/12/2010	0.374
14	X	0-1	PCBs	11/12/2010	0.866
3	Y	0-1	PCBs	11/11/2010	ND
4	Y	0-1	PCBs	11/11/2010	0.165
5	Y	0-1	PCBs	11/11/2010	0.924
6	Y	0-1	PCBs	11/11/2010	ND
7	Y	0-1	PCBs	11/11/2010	0.216
8	Y	0-1	PCBs	11/11/2010	0.170
10	Y	0-1	PCBs	11/12/2010	ND
11	Y	0-1	PCBs	11/12/2010	0.269
12	Y	0-1	PCBs	11/12/2010	0.401
14	Y	0-1	PCBs	11/12/2010	0.340
3	Z	0-1	PCBs	11/11/2010	ND
5	Z	0-1	PCBs	11/11/2010	1.10
7	Z	0-1	PCBs	11/11/2010	ND
8	Z	0-1	PCBs	11/12/2010	0.534
10	Z	0-1	PCBs	11/12/2010	13.6
12	Z	0-1	PCBs	11/12/2010	0.103
14	Z	0-1	PCBs	11/12/2010	0.402
DUP-A		0-1	PCBs	11/4/2010	0.442
DUP-AA		0-1	PCBs	11/10/2010	6.44
DUP-C		0-1	PCBs	11/4/2010	2.07
DUP-CC		0-1	PCBs	11/11/2010	ND
DUP-E		0-1	PCBs	11/4/2010	1.78
DUP-EE		0-1	PCBs	11/11/2010	0.132
DUP-G		0-1	PCBs	11/4/2010	ND
DUP-GG		0-1	PCBs	11/11/2010	ND
DUP-II		0-1	PCBs	11/11/2010	0.039
DUP-J		0-1	PCBs	11/4/2010	ND
DUP-K		0-1	PCBs	11/4/2010	0.159
DUP-KK		0-1	PCBs	11/11/2010	0.195
DUP-M		0-1	PCBs	11/5/2010	0.504
DUP-MM		0-1	PCBs	11/12/2010	0.086
DUP-O		0-1	PCBs	11/5/2010	0.262
DUP-OO		0-1	PCBs	11/12/2010	0.469
DUP-Q		0-1	PCBs	11/5/2010	0.834
DUP-S		0-1	PCBs	11/9/2010	97.4
DUP-SS		0-1	PCBs	11/12/2010	ND
DUP-U		0-1	PCBs	11/9/2010	7.85
DUP-UU		0-1	PCBs	11/15/2010	ND
DUP-W		0-1	PCBs	11/9/2010	3.72
DUP-WW		0-1	PCBs	11/15/2010	ND
DUP-Y		0-1	PCBs	11/10/2010	ND

1-2 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Date Sampled	Results (mg/kg)
15	B	1-2	PCBs	11/3/2010	ND
7	BB	1-2	PCBs	11/11/2010	ND
7	C	1-2	PCBs	11/4/2010	ND
9	C	1-2	PCBs	11/4/2010	ND
12	C	1-2	PCBs	11/4/2010	ND
5	D	1-2	PCBs	11/4/2010	1.035
6	D	1-2	PCBs	11/4/2010	1.9
9	D	1-2	PCBs	11/4/2010	ND
12	D	1-2	PCBs	11/4/2010	ND
2	E	1-2	PCBs	11/4/2010	3.16
3	E	1-2	PCBs	11/4/2010	0.0734
4	E	1-2	PCBs	11/4/2010	3.07
5	E	1-2	PCBs	11/4/2010	1.1162
7	E	1-2	PCBs	11/4/2010	10.8
8	E	1-2	PCBs	11/4/2010	1.03
9	E	1-2	PCBs	11/4/2010	16.1
11	E	1-2	PCBs	11/4/2010	1.63
13	E	1-2	PCBs	11/4/2010	ND
6	F	1-2	PCBs	11/4/2010	0.419
9	F	1-2	PCBs	11/5/2010	24.69
13	F	1-2	PCBs	11/4/2010	20.2
6	G	1-2	PCBs	11/5/2010	0.314
7	G	1-2	PCBs	11/5/2010	0.590
11	H	1-2	PCBs	11/5/2010	3.86
14	H	1-2	PCBs	11/5/2010	ND
15	H	1-2	PCBs	11/5/2010	2.52
9	HH	1-2	PCBs	11/12/2010	ND
5	I	1-2	PCBs	11/5/2010	1.151
6	I	1-2	PCBs	11/5/2010	0.0733
13	I	1-2	PCBs	11/5/2010	13.97
20	I	1-2	PCBs	11/5/2010	No Sample
24	I	1-2	PCBs	11/5/2010	ND
25	I	1-2	PCBs	11/5/2010	0.1742
26	I	1-2	PCBs	11/5/2010	ND
27	I	1-2	PCBs	11/5/2010	0.4788
28	I	1-2	PCBs	11/5/2010	15.43
29	I	1-2	PCBs	11/5/2010	9.68
12	II	1-2	PCBs	11/12/2010	0.0879
13	II	1-2	PCBs	11/12/2010	0.337
4	J	1-2	PCBs	11/5/2010	31.5
5	J	1-2	PCBs	11/5/2010	0.738
6	J	1-2	PCBs	11/5/2010	0.116
9	J	1-2	PCBs	11/5/2010	0.633
12	J	1-2	PCBs	11/5/2010	2.983
17	J	1-2	PCBs	11/5/2010	ND
20	J	1-2	PCBs	11/5/2010	ND
21	J	1-2	PCBs	11/5/2010	ND
23	J	1-2	PCBs	11/5/2010	19.68
25	J	1-2	PCBs	11/5/2010	ND

1-2 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Date Sampled	Results (mg/kg)
27	J	1-2	PCBs	11/5/2010	9.95
28	J	1-2	PCBs	11/5/2010	0.3841
13	JJ	1-2	PCBs	11/12/2010	ND
4	K	1-2	PCBs	11/5/2010	45.2
8	K	1-2	PCBs	11/5/2010	ND
13	K	1-2	PCBs	11/9/2010	0.506
14	K	1-2	PCBs	11/9/2010	0.49
16	K	1-2	PCBs	11/9/2010	3.185
17	K	1-2	PCBs	11/9/2010	0.186
20	K	1-2	PCBs	11/9/2010	4.85
21	K	1-2	PCBs	11/9/2010	440
23	K	1-2	PCBs	11/9/2010	10.32
24	K	1-2	PCBs	11/9/2010	ND
25	K	1-2	PCBs	11/9/2010	84.8
26	K	1-2	PCBs	11/9/2010	0.16
27	K	1-2	PCBs	11/9/2010	2.29
28	K	1-2	PCBs	11/9/2010	1.98
29	K	1-2	PCBs	11/9/2010	0.808
31	K	1-2	PCBs	11/9/2010	0.315
8	L	1-2	PCBs	11/9/2010	2.83
9	L	1-2	PCBs	11/9/2010	0.3174
10	L	1-2	PCBs	11/9/2010	0.9427
15	L	1-2	PCBs	11/9/2010	ND
16	L	1-2	PCBs	11/9/2010	ND
18	L	1-2	PCBs	11/9/2010	0.1045
19	L	1-2	PCBs	11/9/2010	No Sample
20	L	1-2	PCBs	11/9/2010	ND
21	L	1-2	PCBs	11/9/2010	No Sample
23	L	1-2	PCBs	11/9/2010	1.582
24	L	1-2	PCBs	11/9/2010	2.481
25	L	1-2	PCBs	11/9/2010	0.328
26	L	1-2	PCBs	11/9/2010	ND
27	L	1-2	PCBs	11/9/2010	1.104
30	L	1-2	PCBs	11/9/2010	0.21
3	M	1-2	PCBs	11/11/2010	23.73
7	M	1-2	PCBs	11/9/2010	0.3437
8	M	1-2	PCBs	11/9/2010	0.334
9	M	1-2	PCBs	11/9/2010	3.096
11	M	1-2	PCBs	11/9/2010	1.548
12	M	1-2	PCBs	11/9/2010	0.767
13	M	1-2	PCBs	11/9/2010	0.0671
15	M	1-2	PCBs	11/9/2010	1.521
16	M	1-2	PCBs	11/9/2010	0.1289
18	M	1-2	PCBs	11/9/2010	0.1459
20	M	1-2	PCBs	11/9/2010	1.166
22	M	1-2	PCBs	11/10/2010	ND
23	M	1-2	PCBs	11/9/2010	2.116
24	M	1-2	PCBs	11/9/2010	ND
25	M	1-2	PCBs	11/9/2010	0.1079
26	M	1-2	PCBs	11/9/2010	0.2806
27	M	1-2	PCBs	11/10/2010	0.5733

1-2 foot PCB Sampling Results
City Pier Project
Fall River, MA

Row	Column	Depth Interval (feet BGS)	Analysis	Date Sampled	Results (mg/kg)
28	M	1-2	PCBs	11/10/2010	0.792
29	M	1-2	PCBs	11/10/2010	ND
30	M	1-2	PCBs	11/10/2010	ND
3	N	1-2	PCBs	11/11/2010	30.1
3	P	1-2	PCBs	11/10/2010	7.36
4	Q	1-2	PCBs	11/11/2010	4.38
3	R	1-2	PCBs	11/11/2010	ND
3	T	1-2	PCBs	11/11/2010	ND
6	X	1-2	PCBs	11/11/2010	1.92
7	X	1-2	PCBs	11/11/2010	1.629
8	X	1-2	PCBs	11/11/2010	0.917
9	X	1-2	PCBs	11/12/2010	0.1747
5	Z	1-2	PCBs	11/11/2010	1.059
10	Z	1-2	PCBs	11/12/2010	30.5
DUP-BB			PCBs	11/10/2010	4.47
DUP-D			PCBs	11/4/2010	ND
DUP-F			PCBs	11/4/2010	3.78
Dup-R			PCBs	11/5/2010	2.832
DUP-T			PCBs	11/9/2010	2.96
DUP-V			PCBs	11/9/2010	0.274
DUP-X			PCBs	11/9/2010	2.888

2-3 foot PCB Sampling Results
City Pier Project
Fall River, MA

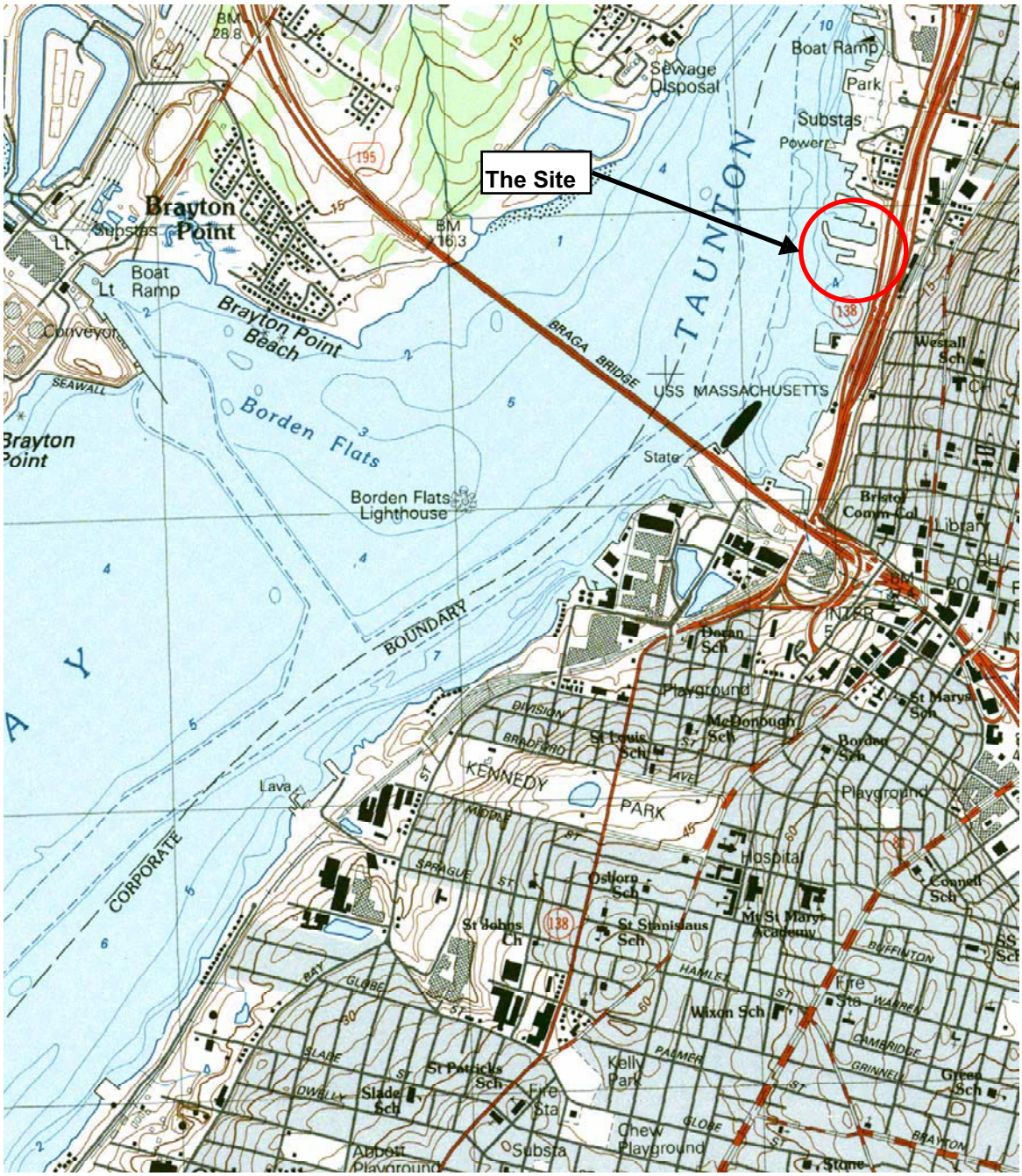
Row	Column	Depth Interval (feet BGS)	Analysis	Date Sampled	PCBs (mg/kg)
2	E	2-3	PCBs	11/4/2010	4.58
2	N	2-3	PCBs	11/10/2010	ND
3	M	2-3	PCBs	11/11/2010	21.4
3	N	2-3	PCBs	11/11/2010	20.9
3	P	2-3	PCBs	11/10/2010	0.652
4	E	2-3	PCBs	11/4/2010	0.609
4	J	2-3	PCBs	11/5/2010	34.0
4	K	2-3	PCBs	11/5/2010	73.0
4	Q	2-3	PCBs	11/11/2010	0.198
5	D	2-3	PCBs	11/4/2010	ND
5	E	2-3	PCBs	11/4/2010	ND
5	I	2-3	PCBs	11/5/2010	ND
5	Z	2-3	PCBs	11/11/2010	ND
6	D	2-3	PCBs	11/4/2010	ND
Dup-1			PCBs	11/9/2010	76.3

Table4
Soil Disposal Sample Analytical Results
City Pier Project
Fall River, Massachusetts

Sample ID	Comp-1	Comp-2	Comp-3	Comp-4	Comp-5	Comp-6	Comp-7	Comp-8	Comp-9	Comp-10	Comp-11
Sample Depth	0-3 feet	0-3 feet	0-2 feet	0-2 feet	0-2 feet	0-2 feet	0-2 feet	0-2 feet	0-3 feet	0-3 feet	0-3 feet
Sampling Date	11/5/10	11/5/2010	11/5/2010	11/8/2010	11/8/10	11/8/2010	11/8/10	11/8/2010	11/11/10	11/11/10	11/11/10
Polynuclear Aromatic Hydrocarbons (mg/kg)											
1,2,4-Trichlorobenzene	0.380 U	4.0 U	0.740 U	**38**	0.370 U	0.420 U	0.410 U	0.390 U	NA	NA	NA
Bis(2-Ethyhexy)phthalate	0.760 U	7.9 U	1.5 U	**9.3**	0.740 U	0.850 U	0.830 U	0.780 U	NA	NA	NA
2-Methylnaphthalene	0.380 U	4.0 U	0.740 U	1.8 U	0.370 U	0.420 U	0.410 U	0.390 U	NA	NA	NA
Dibenzofuran						**0.430**	0.410 U	0.390 U	NA	NA	NA
Acenaphthene	0.380 U	4.0 U	0.740 U	1.8 U	0.370 U	**0.420**	0.410 U	0.390 U	NA	NA	NA
Acenaphthylene	0.380 U	**11.0**	0.740 U	1.8 U	**0.77**	**1.2**	**0.49**	**0.55**	NA	NA	NA
Anthracene	0.380 U	**15.0**	0.740 U	1.8 U	**0.45**	**1.7**	**0.58**	**0.91**	NA	NA	NA
Benzo(a)anthracene	**0.650**	**30.0**	**1.6**	**1.8**	**1.7**	**5.4**	**1.5**	**2.8**	NA	NA	NA
Benzo(a)pyrene	**0.680**	**27.0**	**1.6**	1.8 U	**1.6**	**5.4**	**1.4**	**2.5**	NA	NA	NA
Benzo(b)fluoranthene	**0.590**	**24.0**	**1.6**	**4.2**	**1.7**	**6.2**	**1.3**	**2.7**	NA	NA	NA
Benzo(g,h,i)perylene	**0.490**	**15.0**	**1.1**	**2.0**	**0.85**	**3.8**	**0.86**	**1.50**	NA	NA	NA
Benzo(k)fluoranthene	**0.600**	**23.0**	**1.4**	**3.3**	**1.2**	**4.3**	**1.3**	**2.2**	NA	NA	NA
Chrysene	**0.710**	**30.0**	**1.9**	**2.8**	**1.7**	**5.2**	**1.5**	**2.6**	NA	NA	NA
Dibenz(a,h)anthracene	**0.230**	**4.10**	0.45 U	1.1 U	**0.26**	**1.0**	**0.33**	**0.55**	NA	NA	NA
Fluoranthene	**1.4**	**66.0**	**3.4**	**21**	**2.5**	**7.3**	**2.4**	**4.6**	NA	NA	NA
Fluorene	0.380 U	**8.4**	0.740 U	1.8 U	0.370 U	**0.470**	0.410 U	0.390 U	NA	NA	NA
Indeno(1,2,3-cd)pyrene	**0.430**	**14.0**	**1.0**	**1.9**	**0.78**	**3.5**	**0.76**	**1.3**	NA	NA	NA
Naphthalene	0.380 U	4.0 U	0.740 U	1.8 U	0.370 U	**0.59**	0.410 U	0.390 U	NA	NA	NA
Phenanthrene	**0.960**	**51.0**	**1.8**	1.8 U	**1.6**	**5.8**	**1.5**	**3.2**	NA	NA	NA
Pyrene	**1.200**	**55.0**	**2.8**	**3.8**	**1.9**	**6.3**	**2.0**	0.390 U	NA	NA	NA
Total SVOCs	**7.94**	**359**	**18.2**	**88.1**	**17.0**	**59.0**	**15.9**	**25.4**	NA	NA	NA
Volatile Organic Carbon (mg/kg)											
Naphthalene	0.28 U	**0.63**	**0.014**	0.29 U	0.0058 U	0.014 U	0.0097 U	0.0099 U	0.012 U	0.011 U	0.290 U
Tetrachloroethene	**0.78**	0.078 U	0.0024 U	**1.5**	0.0015 U	0.0034 U	**0.0029**	0.0025 U	**0.0065**	0.0027 U	**0.530**
Trichloroethene	**2.4**	0.078 U	**0.0034**	**1.1**	0.0015 U	0.0034 U	0.0024 U	0.0025 U	**0.018**	**0.003**	**0.660**
Total VOCs	**3.18**	**0.63**	**0.017**	**2.6**	ND	ND	**0.0029**	ND	**0.025**	**0.003**	**1.190**
pH, Flashpoint, Reactivity (Cyanide, Sulfide)											
pH	6.6	6.7	6.8	7.6	7.6	7.9	8.1	8.5	7.9	6.8	4.7
Flashpoint	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Reactivity (Cyanide) (mg/kg)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Reactivity (Sulfide) (mg/kg)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pesticides (mg/kg)											
Lindane	**0.0074**	0.061 U	**0.016**	**2.46**	0.014 U	0.015 U	0.015 U	0.031 U	0.0029 U	0.003 U	0.003 U
Dieldrin	**0.0226**	**0.150**	**0.025**	**3.04**	**0.131**	**0.573**	**0.028**	**0.103**	**0.0632**	**0.032**	**0.007**
4,4'-DDT	**0.0324**	0.342 U	**0.034**	1.56 U	0.081 U	0.087 U	0.083 U	0.176 U	0.0165 U	0.017 U	0.016 U
Endosulfan II	0.0085 U	0.183 U	0.009 U	0.834 U	0.043 U	**0.099**	0.044 U	0.094 U	**0.020**	**0.009**	0.009 U
Total Pesticides	**0.062**	**0.150**	**0.075**	**5.500**	**0.131**	**0.672**	**0.028**	**0.103**	**0.084**	**0.042**	**0.007**
Herbicides (mg/kg)											
MCPP	3.6 U	3.8 U	3.7 U	3.6 U	**5.6**	4.0 U	3.8 U	3.9 U	3.8 U	3.7 U	3.7 U
Total Herbicides	ND	ND	ND	ND	**5.6**	ND	ND	ND	ND	ND	ND
Metals (mg/kg)											
Arsenic	**4.3**	**8.7**	**5.0**	**4.8**	**4.2**	**12.0**	**4.0**	**5.7**	**4.6**	**2.4**	**3.5**
Barium	**39**	**64**	**91**	**64**	**46**	**80**	**61**	**96**	**29**	**10**	**46**
Cadmium	0.44 U	0.45 U	0.44 U	0.44 U	0.43 U	0.47 U	0.45 U	**1.0**	0.46 U	0.44 **U**	0.43 U
Chromium	**9.7**	**8.6**	**8.2**	**8.3**	**12.0**	**14.0**	**18.0**	**15.0**	**13.0**	**2.3**	**7.1**
Lead	**130**	**490**	**440**	**330**	**91**	**120**	**61**	**690**	**83**	**27**	**49**
Mercury	**0.18**	**0.17**	**0.61**	**0.42**	**0.10**	**0.28**	**0.160**	**0.360**	**0.200**	**0.130**	**0.210**
Selenium	2.20 U	2.20 U	2.20 U	2.2 U	2.10 U	2.3 U	2.20 U	2.40 U	2.30 U	2.20 U	2.20 U
Silver	0.440 U	0.450 U	0.440 U	0.440 U	0.430 U	0.470 U	0.450 U	0.480 U	0.460 U	0.440 U	0.430 U
TCLP Metals (mg/L)											
TCLP Lead											

Notes:
BOLD = Detection
U - Not detected above the listed detection limit
NA - sample not analyzed
NE - Standard not established
ND - Not detected above dectection limits

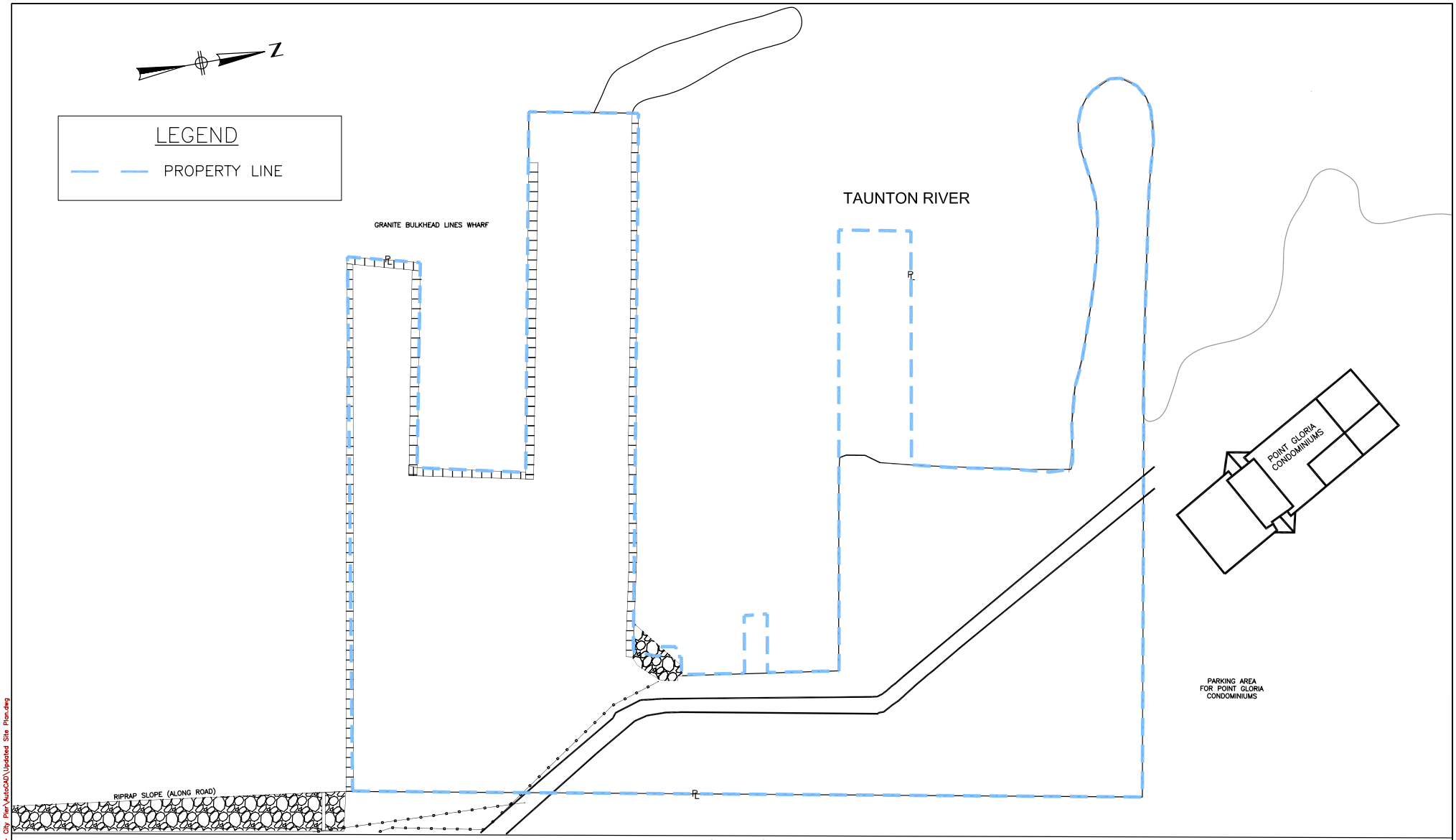
Figures



B E T A Group, Inc.
Engineers • Scientists • Planners
315 Norwood Park South, Norwood, MA 02062 781.255.1982
email: beta@beta-inc.com

City Pier
Davol Street
Fall River, Massachusetts
RTN Number 4-17012

Figure 1
Site Locus



NOTE: BASE SITE PLAN TAKEN FROM PLAN PREVIOUSLY PREPARED BY ESS

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

REVISIONS

DESIGNED BY:

CHECKED BY:

B E T A Group, Inc.
Engineers · Scientists · Planners

City Pier
Davol Street
Fall River, Massachusetts

SCALE: 1 inch = 80 ft.

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

Figure 2
Site Plan

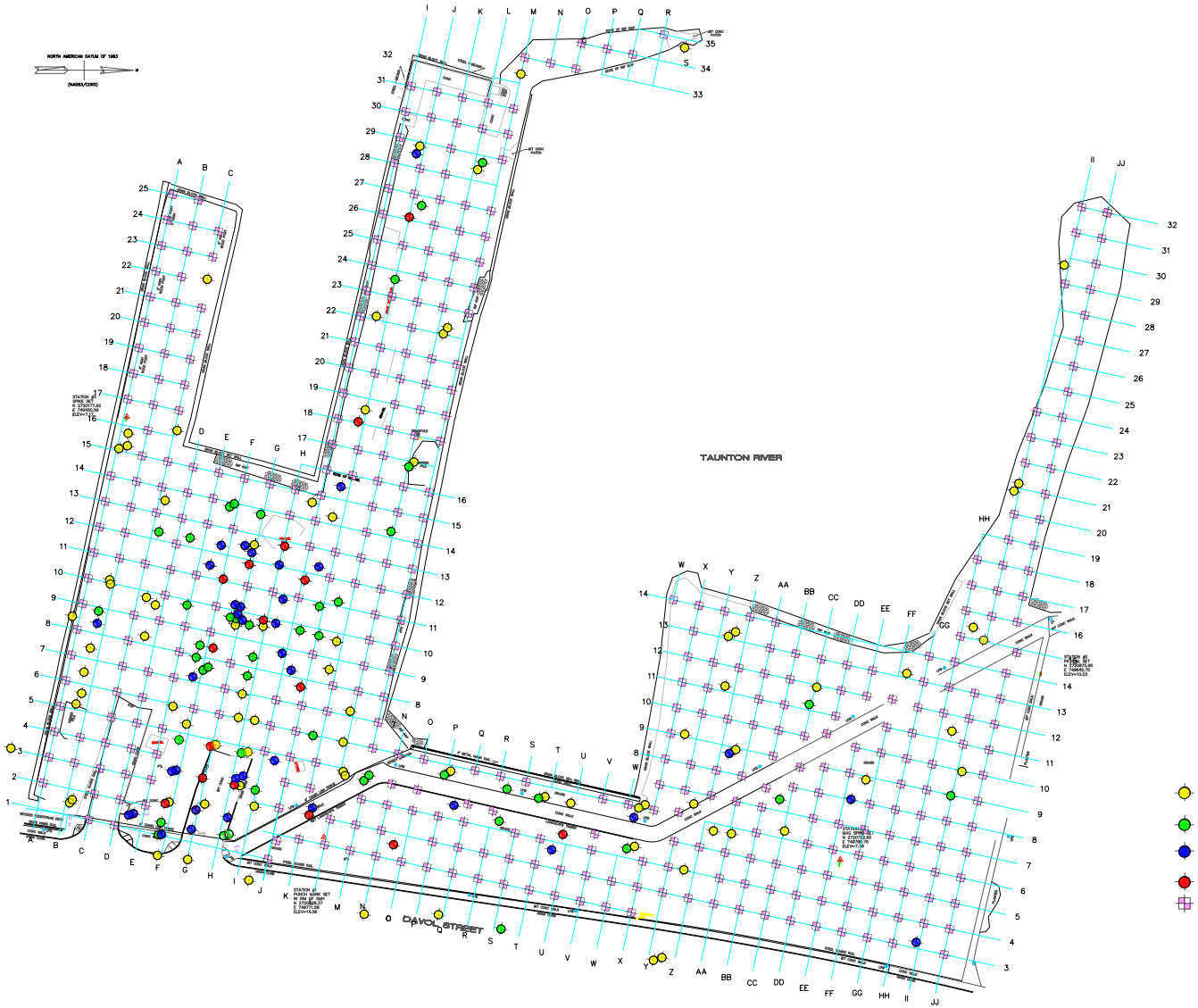
JOB 3719

PLOT DATE: Jun. 22, 2010

ISSUE DATE

SHEET

O:\3700s\3719 – Fall River – City Pier\AutoCAD\Updated Site Plan.dwg



LEGEND

- SOIL SAMPLING LOCATION (PCBs LESS THAN OR EQUAL TO 1.0)
- SOIL SAMPLING LOCATION (PCBs GREATER THAN 1 PPM BUT LESS THAN 10 PPM)
- PCB SOIL SAMPLING LOCATION (GREATER THAN 10 PPM BUT LESS THAN 100 PPM)
- PCB SOIL SAMPLING LOCATION (GREATER THAN 100 PPM)
- PROPOSED 20' GRID SAMPLE LOCATION

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

REVISIONS

DRAWN BY: AG

DESIGNED BY: JRM

CHECKED BY: JRM

BETA Group, Inc.
Engineers · Scientists · Planners
6 Blackstone Valley Place
Lincoln, RI 02865
401.333.2382
email: BETA@BETAeng.com

SCALE:

City of Fall River, Massachusetts

FIGURE 3
SAMPLELOCATIONS

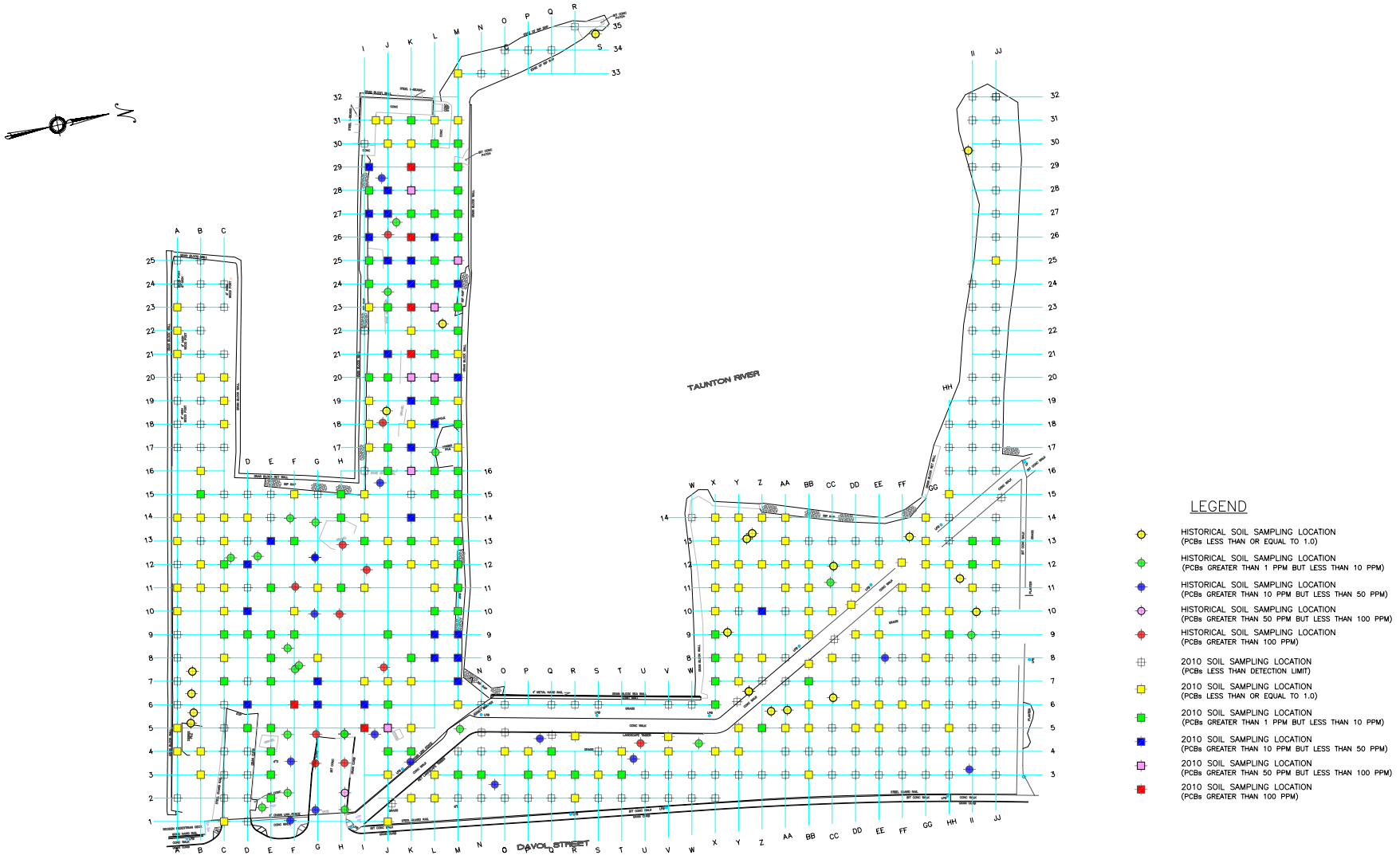
JOB 3719 - City Pier

PLOT DATE: Jun. 23, 2011 2:23pm

ISSUE DATE

SHEET

K:\3719 Fall River\Acad\U12300WS.dwg



K:\3719 Fall River\Acad\0-1 Foot Sample Results Plan.dwg

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

REVISIONS

DRAWN BY: AG
DESIGNED BY: JRM
CHECKED BY: JRM

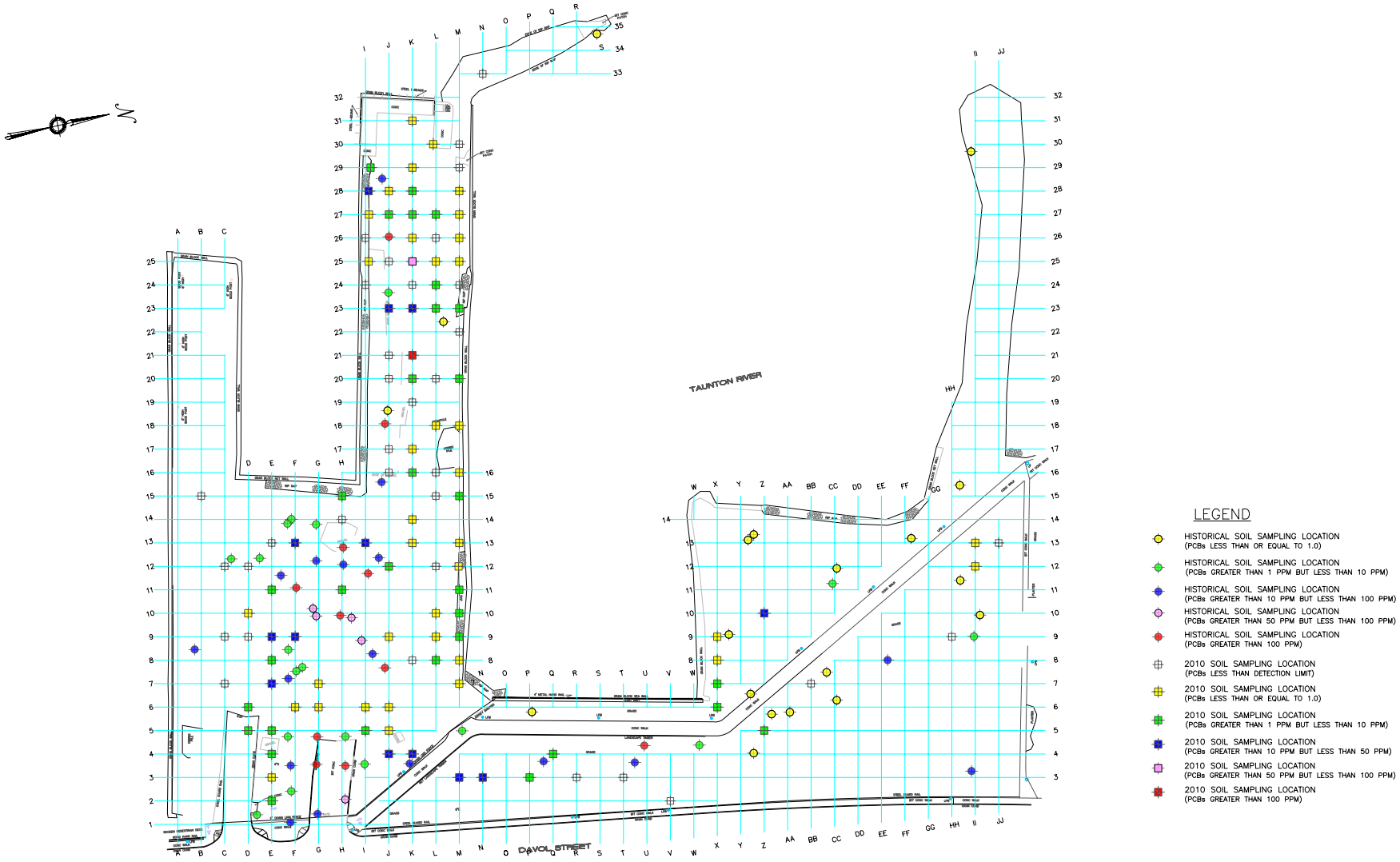
BETA Group, Inc.
Engineers · Scientists · Planners
6 Blackstone Valley Place
Lincoln, RI 02865
401.333.2382
email: BETA@BETA-Inc.com

SCALE: 1"=40'±

City of Fall River, Massachusetts

FIGURE 4
0-1 FOOT RESULTS PLAN

JOB 3719 - City Pier
PLOT DATE: Jun. 23, 2011 2:25pm
ISSUE DATE
SHEET



K:\3719 Fall River\Acad\1-2 Foot Sample Results Plan.dwg

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION
REVISIONS				

DRAWN BY: AG
DESIGNED BY: JRM
CHECKED BY: JRM

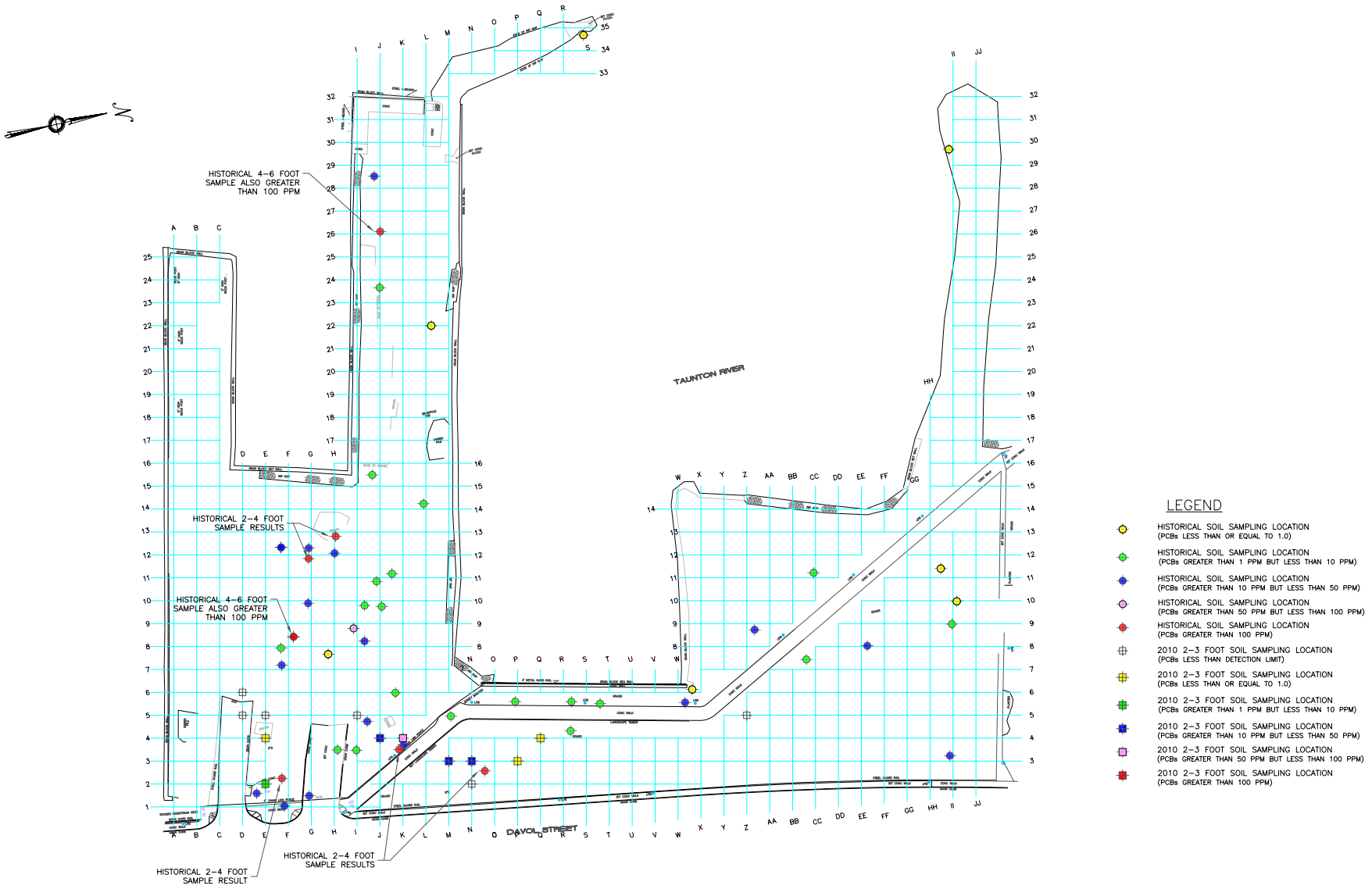
BETA Group, Inc.
Engineers · Scientists · Planners
6 Blackstone Valley Place
Lincoln, RI 02865
401.333.2382
email: BETA@BETA-Inc.com

SCALE: 1"=40'±

City of Fall River, Massachusetts

FIGURE 5
1-2 FOOT RESULTS PLAN

JOB 3719 - City Pier
PLOT DATE: Jun. 23, 2011 2:27pm
ISSUE DATE
SHEET



K:\3719 Fall River\Acad\2-3 Foot Sample Results Plan.dwg

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

REVISIONS

DRAWN BY: AG
DESIGNED BY: JRM
CHECKED BY: JRM

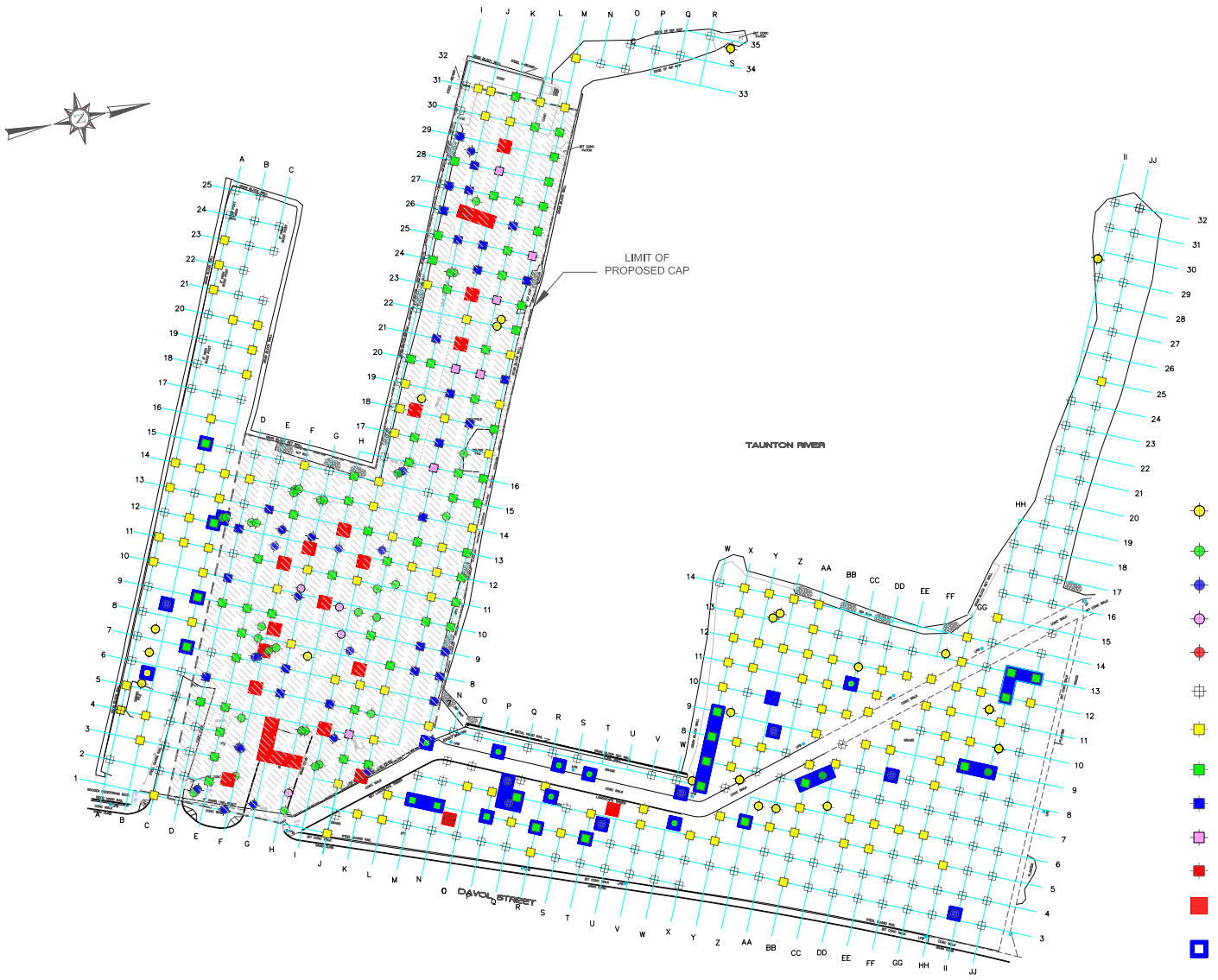
BETA Group, Inc.
Engineers·Scientists·Planners
6 Blackstone Valley Place
Lincoln, RI 02865
401.333.2382
email: BETA@BETA-Inc.com

SCALE: 1"=40'±

City of Fall River, Massachusetts

FIGURE 6
2-3 FOOT RESULTS PLAN

JOB 3719 - City Pier
PLOT DATE: Jun. 23, 2011 2:28pm
ISSUE DATE
SHEET



LEGEND

- HISTORICAL SOIL SAMPLING LOCATION (PCBs LESS THAN OR EQUAL TO 1.0)
- HISTORICAL SOIL SAMPLING LOCATION (PCBs GREATER THAN 1 PPM BUT LESS THAN 10 PPM)
- HISTORICAL SOIL SAMPLING LOCATION (PCBs GREATER THAN 10 PPM BUT LESS THAN 50 PPM)
- HISTORICAL SOIL SAMPLING LOCATION (PCBs GREATER THAN 50 PPM BUT LESS THAN 100 PPM)
- HISTORICAL SOIL SAMPLING LOCATION (PCBs GREATER THAN 100 PPM)
- 2010 SOIL SAMPLING LOCATION (PCBs LESS THAN DETECTION LIMIT)
- 2010 SOIL SAMPLING LOCATION (PCBs LESS THAN OR EQUAL TO 1.0)
- 2010 SOIL SAMPLING LOCATION (PCBs GREATER THAN 1 PPM BUT LESS THAN 10 PPM)
- 2010 SOIL SAMPLING LOCATION (PCBs GREATER THAN 10 PPM BUT LESS THAN 50 PPM)
- 2010 SOIL SAMPLING LOCATION (PCBs GREATER THAN 50 PPM BUT LESS THAN 100 PPM)
- 2010 SOIL SAMPLING LOCATION (PCBs GREATER THAN 100 PPM)
- SOIL TO BE REMOVED FOR OFFSITE DISPOSAL
- SOIL TO BE CONSOLIDATED WITHIN THE AUL AREA
- PROPOSED AUL AREA

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

REVISIONS

DRAWN BY: AG
DESIGNED BY: JRM
CHECKED BY: JRM

BETA Group, Inc.
Engineers · Scientists · Planners
6 Blackstone Valley Place
Lincoln, RI 02865
401.333.2382
email: BETA@BETA-Inc.com

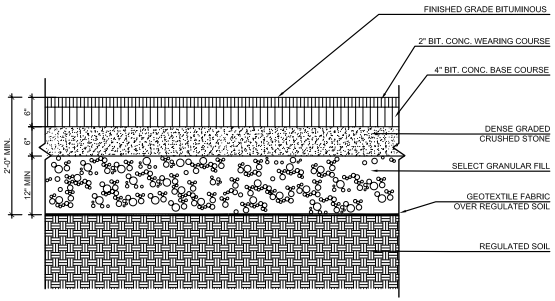
SCALE: 1"=40'±

City of Fall River, Massachusetts

FIGURE 7
SOIL MANAGEMENT PLAN &
CAP AREA

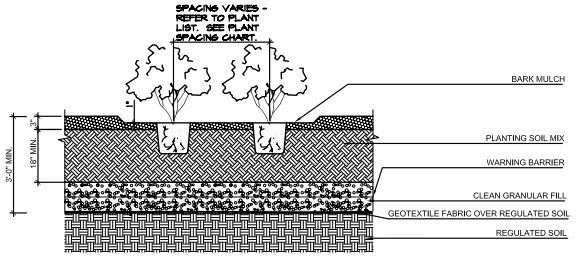
JOB: 3719 - City Pier
PLOT DATE: Jun. 23, 2011 2:31pm
ISSUE DATE:
SHEET:

K:\3719 Fall River\Acad\Work_Plan_Revised.dwg



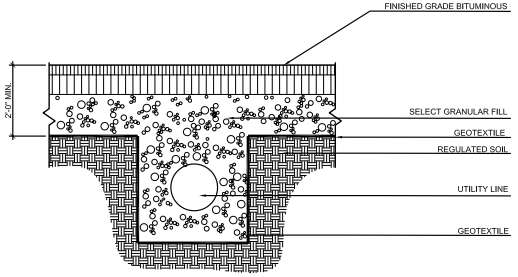
PAVED CAP DETAIL

NOT TO SCALE



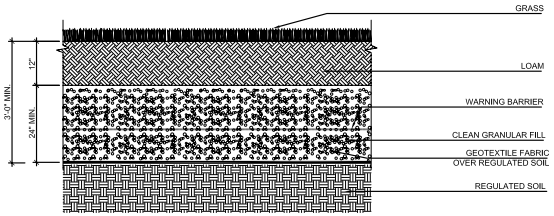
PLANTING DETAIL

NOT TO SCALE



UTILITY CLEAN CORRIDOR DETAIL

NOT TO SCALE



LAWN SEEDING DETAIL

NOT TO SCALE

K:\3719 Fall River\Acad\CapDetails.dwg

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

REVISIONS

DRAWN BY: AG
DESIGNED BY: JRM
CHECKED BY: JRM

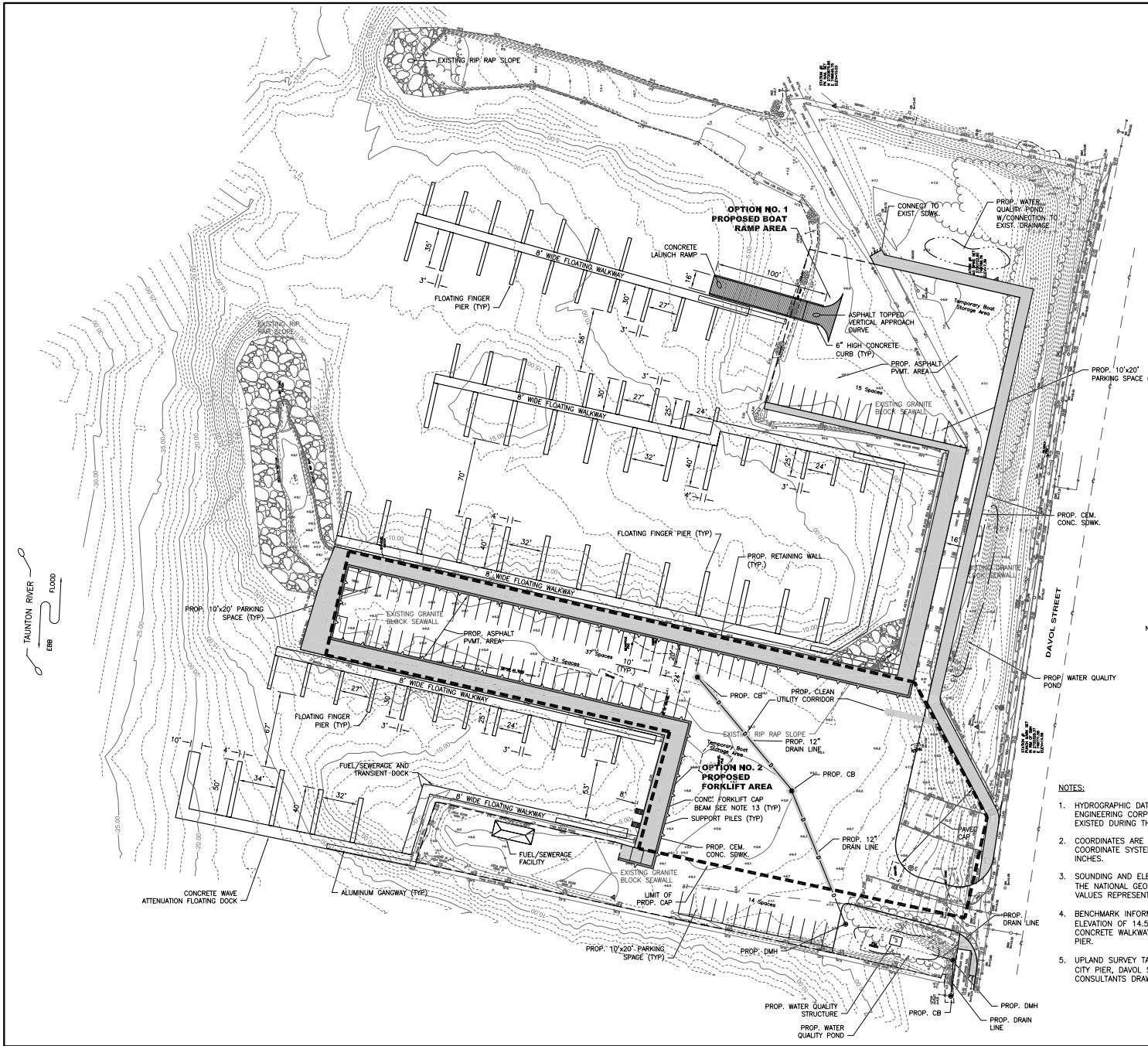
BETA Group, Inc.
Engineers · Scientists · Planners
6 Blackstone Valley Place
Lincoln, RI 02865
401.333.2382
email: BETA@BETA-Inc.com

SCALE:

City of Fall River, Massachusetts

FIGURE 8
CAP DETAILS

JOB: 3719 - City Pier
PLOT DATE: Jun. 23, 2011 3:12pm
ISSUE DATE:
SHEET:



NOTES:

1. HYDROGRAPHIC DATA SHOWN WAS COLLECTED ON MAY 3, 2011 BY CHILDS ENGINEERING CORPORATION AND CAN ONLY REFLECT CONDITIONS AS THEY EXISTED DURING THE TIME OF THE SURVEY.
2. SOUNDING AND ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD '29). NEGATIVE VALUES REPRESENT AN ELEVATION BELOW THAT SAME PLANE.
6. FALL RIVER CITY PIER, SHORELINE AND SURROUNDING STRUCTURES ARE SHOWN FOR REFERENCE ONLY AND ARE TAKEN FROM DRAWING TITLED:
   "TOPOGRAPHIC SURVEY
   CITY PIER, DAVOL STREET
   FALL RIVER, MA."
   DATED 8/31/2010 BY SURVEYING AND MAPPING CONSULTANTS, DRAWING No.U12300FP.
7. DISTANCE BETWEEN FINGER PIERS ARE FOR DOUBLE BERTHS.
8. CONCRETE WAVE ATTENUATION FLOATING DOCKS ARE PROPOSED FOR REDUCING WAVE ACTION CREATED BY PREVAILING WINDS FROM THE SOUTH AND SOUTHWEST
9. SOUNDING AND ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD '29). NEGATIVE VALUES REPRESENT AN ELEVATION BELOW THAT SAME PLANE.
10. GANGWAY LENGTH DETERMINED USING TOP OF WALL ELEVATION = +8.0', TOP OF FLOATING DOCK ELEVATION = 0.0' AND FEDERAL ADA SLOPE REQUIREMENTS. ALL GANGWAYS TO BE 80' LONG WITH 3' WALKING CLEARANCE.
11. MINIMUM OF 4 BERTHS SHALL BE RESERVED FOR ACCESSIBLE BERTHING ACCORDING TO FEDERAL ADA REQUIREMENTS. ACCESSIBLE BERTHS SHALL HAVE A 5' WIDE FINGER FLOATS AND 4" HIGH WHEEL STOP CURBS.

BIRTH QUANTITIES

BIRTH LENGTHS	No. OF BIRTHS
25 FEET	29
30 FEET	55
35 FEET	3
40 FEET	42
50 FEET	5

TOTAL No. OF BIRTHS AT MARINA = 134

DATUM

MHW	3.20'
NGVD '29	0.00'
MLW	-1.58'

NOTES:

1. HYDROGRAPHIC DATA SHOWN WAS COLLECTED ON MAY 3, 2011 BY CHILDS ENGINEERING CORPORATION AND CAN ONLY REFLECT CONDITIONS AS THEY EXISTED DURING THE TIME OF THE SURVEY.
2. COORDINATES ARE BASED ON THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATE SYSTEM NAD 1983 AND ARE EXPRESSED IN FEET AND INCHES.
3. SOUNDING AND ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD '29). POSITIVE VALUES REPRESENT AN ELEVATION BELOW THAT SAME PLANE.
4. BENCHMARK INFORMATION BASED ON SEWER MAN HOLE (SMH) RIM ELEVATION OF 14.56' (NGVD '29) WHICH IS LOCATED BETWEEN THE CONCRETE WALKWAY AND DAVOL STREET, EAST OF THE FALL RIVER CITY PIER.
5. UPLAND SURVEY TAKEN FROM DRAWING TITLED "TOPOGRAPHIC SURVEY, CITY PIER, DAVOL STREET, FALL RIVER, MA" BY SURVEYING AND MAPPING CONSULTANTS DRAWING NO. U12300FP.

Engineered by:
BETA Group, Inc.
Engineers • Planners • Landscape Architects • Scientists
6 Blackstone Valley Place
Lincoln, RI 02865
401.333.2382
email: BETA@BETA-Inc.com

P.E. Stamp:

Subconsultant:

Project

Fall River City Pier

Davol St., Fall River, MA

Title

Preliminary Development Plan

Revisions

No.	Description	Date

File: 3719 SitePlan.dwg

Drawn By: MJZ

Designed By:

Checked By: KMA

Job No: 3719 Issue Date: 6/2/11

North Arrow

Scale

40 0 40 80

Scale in Feet: 1"=40'

Not for Construction

Figure No.:

9

Plot Date: Jun 23, 2011 3:09pm

K:\3719 Fall River\Acad\3719 SitePlan.dwg

Appendix A
Laboratory Certificates of Analysis

Appendix B
Tier II Data Validation by Wilcox and Barton

Wilcox & Barton INC.
ENVIRONMENTAL AND ENGINEERING SERVICES

TIER II DATA VALIDATION

CITY PIER
DAVOL STREER
FALL RIVER, MASSACHUSETTS
RTN No. 4-17012

Prepared for:
BETA Group, Inc.
6 Blackstone Valley Place,
Lincoln, Rhode Island 02865
Contact: Joseph McLoughlin, LSP, (401) 333-2382

Prepared by:
Wilcox & Barton, Inc.
1115 Route 100B, Suite 200
Moretown, Vermont 05660
Contact: Cynthia Fuller, (401) 323-9571
April 21, 2011

Wilcox & Barton, Inc. Project No.: BETA0009

REVIEW DRAFT

TIER II DATA VALIDATION

CITY PIER
DAVOL STREET
FALL RIVER, MASSACHUSETTS
RTN No. 4-17012

Prepared for:
BETA Group, Inc.
6 Blackstone Valley Place,
Lincoln, Rhode Island 02865
Contact: Joseph McLoughlin, LSP, (401) 333-2382

Prepared by:
Wilcox & Barton, Inc.
1115 Route 100B, Suite 200
Moretown, Vermont 05660
Contact: Cynthia Fuller, (401) 323-9571

April 21, 2011

Wilcox & Barton, Inc. Project No.: BETA0009

CERTIFICATION

The following personnel have prepared and/or reviewed this report for accuracy, content, and quality of presentation.

Document Name: Tier II Data Validation
City Pier - Davol Street
Fall River, Massachusetts
MassDEP RTN 4-17012

Date/Version: April 21, 2011

Cynthia Fuller
Health Risk Assessor

TABLE OF CONTENTS

1.0 INTRODUCTION

A modified Tier II data validation was performed of chemical analytical data collected from the City Pier site in Fall River, Massachusetts, in accordance with the proposed activities presented in *Risk-Based TSCA Work Plan* (BETA Group, Inc., October 2010), which, in turn, are in accordance with US Environmental Protection Agency (EPA) *EPA New England Data Validation Functional Guidelines for Evaluating Environmental Analyses* (December 1996). The modified Tier II data validation includes a general review of sample receipt, analysis, and the ability of the instruments to recover the elements or compounds that were analyzed. Laboratory analytical reports were obtained from the analyzing laboratory, Alpha Analytical, which should be consulted for additional information on the analyses. The modified Tier II data validation does not evaluate the levels of constituents detected in the samples nor does it address compliance or response actions denoted by the results.

2.0 BACKGROUND

City Pier consists of approximately 4.22 acres of land along the eastern bank of the Taunton River, bordered by Davol Street to the east. The site is currently unused, with surface materials consisting of grass, gravel, and brush. Granite bulkheads are located along the river boundaries of the site and extend to form two piers in the river. Access to the southwest portion of the site is restricted by a 6-foot high chain link fence with locked gates. The surrounding area consists of multi-family housing, commercial properties, and condominium development areas.

Previous documented uses of the site include use as a coal yard, a lumber yard with milling operations, for boat storage and marina uses, and occupation by a gas holder for a gas company. The Fall River Redevelopment Authority (FRRA) acquired the property in 1982.

The results of analytical testing at the site identified polychlorinated biphenyl (PCB) contamination in site soil to concentrations above 50 parts per million (≥50 ppm) at depths between 0 and 8 feet below ground surface. Based on this information, PCB-impacted soil meets the definition of PCB remediation waste as defined under the federal PCB regulations at 40 CFR 761.3. The contamination is believed to have originated from impacted fill material that was placed on site during the initial development of the property, although the original source of the filled material was not documented and is unknown.

The site has been investigated under several investigation programs, and is planned to be developed as a marina and boatyard. This project is consistent with several planning efforts for the Waterfront and the City Pier site, and is a component of the larger harbor, SouthCoast Rail, and the Davol Street/Route 79 relocation program.

3.0 LABORATORY DATA REVIEW

3.1 General Considerations

A modified Tier II data validation was performed in accordance with the proposed activities presented in *Risk-Based TSCA Work Plan* (BETA Group, Inc., October 2010), which, in turn, is in accordance with EPA New England Data Validation Functional Guidelines for Evaluating

Environmental Analyses (December 1996). The modified Tier II data validation includes a general review of sample receipt, analysis, and the ability of the instruments to recover the elements or compounds that were analyzed.

A summary of the Tier II data validation is presented in Table 1. This table identifies the following information:

- Analytical report number,
- Medium sampled (all soil),
- Sample identification
- Sample collection date
- Statement of whether an MCP Analytical Method Report Certification form was provided
- Statement of whether presumptive certainty was attained
- Analytical method
- Analysis data and holding time
- Sample preservation and temperature upon receipt at the laboratory
- Results of method blank analysis (i.e., were any target analytes detected)
- Identification of surrogate compounds used and results of surrogate sample analysis
- Identification of analysis and results of matrix spike/matrix spike duplicate (MS/MSD) samples
- Identification of analysis and results of laboratory control sample/laboratory control sample duplicate (LCS/LCSD) samples
- Any other reported data quality issue identified in the laboratory report
- Identification of qualifications to the data, based on the above.

A review of the chain of custody form, and the laboratory reports (including the narrative) was performed to identify deviations or exceptions to standard methods. Compliance with Massachusetts Department of Environmental Protection (MassDEP) Compendium of Analytical Methods (CAM) presumptive certainty requirements is also discussed.

3.2 Polychlorinated Biphenyl Soil Samples

3.2.1 Sample Correctness and Completeness

MassDEP (CAM) laboratory certification forms were submitted for all PCBs analyses and all analyses met presumptive certainty requirements.

Forty nine (49) sample delivery groups containing a total of 588 soil samples were submitted for PCB analyses by EPA Method 8082/3540C (Soxhlet extraction) as Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, and 1268. Based on a review of the chain of custody form against the laboratory reports, sample identifications were correctly transcribed to the laboratory report and all required samples were analyzed by the correct method. In several cases, samples were submitted to the laboratory and placed on "hold" pending the results of other samples. Therefore, some submitted samples were intentionally not analyzed.

3.2.2 Sample Preservation and Holding Times

The dates of sample collection, sample extraction, and sample analysis were evaluated to determine if analyses were performed within method-specified times. The methods used to preserve and store the samples were also reviewed.

MassDEP CAM requirements identifies a one-year holding time for soil samples for PCB analyses, with analysis to be performed within 40 days of extraction. The US EPA *National Functional Guidelines for Superfund Organic Methods Data Review* (US EPA, June 2008) has identified a holding time of "none" for properly containerized and cooled soil samples. All samples were analyzed within the CAM holding time; the greatest time between collection and analysis being 82 days.

All samples were collected in 120 milliliter amber bottles, were unpreserved, and were cooled after collection, consistent with CAM requirements. Samples were submitted to the laboratory at temperatures between 2.0 ºC and 4.2 ºC.

In numerous samples, reporting limits were elevated above recommended CAM guidelines due to dilution need to properly quantify the sample. No data qualification was assigned because of this occurrence.

3.2.3 Method Blanks

The laboratory (e.g., method) blank data were reviewed to identify possible sampling and laboratory artifacts. Method blanks were analyzed in all sample delivery groups (SDG) for all target Aroclors. None of the method blanks contained detectable concentrations of any Aroclor.

No trip blanks were collected.

3.2.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

The results of MS/MSD sample analysis were reviewed to identify any percent recovery (%REC) results outside of method-specified limits. Thirty seven (37) of the 49 sample delivery groups included the analysis of MS/MSD samples. MS/MSD samples were analyzed for Aroclor 1016 and Aroclor 1260. The acceptance criteria for %REC of a spiked compound in an MS or MSD sample is 40 - 140 percent. The acceptance criterion for the relative percent difference (RPD) in the MS/MSD pair is 50 percent.

Of the 37 sample delivery groups in which MS/MSD samples were analyzed, the %REC and RPD of the samples were within acceptance limits in 33 SDG. In three SDG, the %REC and/or RPD in the MS/MSD samples were above the acceptance limits, suggesting a high bias; and in one SDG, the %REC was below the lower acceptance limit, suggesting a low bias. The site samples used for these four MS/MSD analyses were qualified as estimated ("J") for the Aroclor that was outside of acceptance criteria.

In 12 SDG, MS/MSD samples were not analyzed either because sample dilution would have resulted in %REC below acceptance limits or analysis of the specific sample targeted for MS/MSD analysis was not requested.

3.2.5 Laboratory Control/Laboratory Control Duplicate (LCS/LCSD) Samples

Results of laboratory control sample (LCS) and LCS duplicate (LCSD) sample analysis were reviewed to identify any %REC and RPD outside of method-specified limits. LCS/LCSD samples were included in each SDG. LCS/LCSD samples were analyzed for Aroclor 1016 and Aroclor 1260. The acceptance criteria for %REC in an LCS or LCSD sample is 40 - 140 percent. The acceptance criterion for the RPD in an LCS/LCSD pair is 30 percent.

In six SDG, the surrogate %REC in the LCS or LCSD sample was outside of the acceptance limits (all were above). All samples in the SDG were qualified as estimated ("J").

In 13 SDG (123 samples), the RPD between the LCS and LCSD sample was above the acceptance criterion, although all %REC for each was within the acceptance criteria. No specific action is recommended for an LCS/LCSD RPD above acceptance criteria, so samples were not qualified for this factor.

3.2.6 Surrogate Samples

The constituents analyzed as surrogate compounds and the analytical recoveries of the surrogates were reviewed to identify any results outside of method-specified limits. 2, 4, 5, 6-Tetrachloro-m-xylene (TCMX) and decachlorobiphenyl (DCB) were analyzed as surrogates in site and QC samples for each analyzed sample. The acceptance range for surrogate %REC is 30-150 percent.

In most samples, the %REC of the surrogate compounds was within acceptance limits. However, in 139 samples, the %REC of the surrogate compounds was below the acceptance limit (often 0 percent) because the sample had been diluted prior to analysis to meet quality control requirements. This is not considered a performance failure, and no samples were qualified as a result of this occurrence.

In six SDG, the %REC for one or more *method blank* surrogate compound was above the upper acceptance limit; in one SDG, the surrogate %REC in the method blank was below the lower acceptance limit. Since the six method blanks contained no detectable analytes and the analysis was potentially biased high, no further action or sample qualification was needed. In the one sample delivery group in which the method blank was below the lower acceptance limit, there is a potential that the method blank contained target analytes below the reporting limit. However, given that none of the other analyses contained target analytes in the method blank, the likelihood that this has occurred is low. There is no specific guidance on qualifying sample data based on %REC of method blank surrogate samples.

In four SDG, the %REC for *MS and/or MSD* surrogate samples was outside of acceptance limits for one or both of the surrogates. There is no specific guidance on qualifying sample data based on %REC of MS/MSD surrogate samples, so site sample data were not qualified for this factor.

In two SDG, the %REC for *LCS and/or LCSD* surrogate samples was outside of acceptance limits for one or both surrogates. There is no specific guidance on qualifying sample data based on %REC of LCS/LSCD surrogate samples, so site sample data were not qualified for this factor.

3.2.7 Target Compound Identification

Thirty (30) samples had a dual column RPD above the acceptance limit for an Aroclor analyte (either Aroclor 1260 or 1254), with no obvious column interferences. The laboratory assigned the highest detected result to the sample and the Aroclor results were qualified by the laboratory with a "P."

3.2.8 Duplicate Samples

One or more duplicate samples were collected in most SDG. Because the duplicate samples were named in a manner (e.g., DUP-A) that did not correspond to a primary sample, it was not possible to know to which primary sample the duplicate corresponded. Therefore, the comparability of the duplicate sample to the primary sample was not evaluated.

3.2.9 Chromatogram Review

Chromatograms were not presented in the laboratory report, and so were not reviewed.

3.3 Waste Characterization Samples

Six SDG containing a total of eleven composite soil samples were submitted for analysis of one or more waste characterization parameters, including volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, chlorinated herbicides by EPA Method 8151A, organochlorine pesticides by EPA Method 8081A, total Massachusetts Contingency Plan (MCP) metals by EPA Methods 6010B/7471A, ignitability by EPA Method 1030, reactive cyanide and sulfide, and TCLP lead. These analyses are reviewed in the following sections.

3.3.1 Sample Correctness and Completeness

MCP laboratory certification forms were submitted for all waste characterization analyses and all analyses (where applicable) met presumptive certainty requirements.

Based on a review of the chain of custody form against the laboratory reports, sample identifications were correctly transcribed to the laboratory report and all required samples were analyzed by the correct method, with one exception. In Alpha laboratory report L1018217, a request was made to analyze the samples (COMP-4, COMP-5, and COMP-8) for TCLP pesticides, which were not analyzed. However, notations on the chain of custody form indicate that some changes to the requested analyses may have been verbally made. Therefore, it is not clear if this analysis was inadvertently omitted or was rescinded verbally.

The method used to test for reactive cyanide and sulfide was referenced as SW846, 7.3, indicating Section 7.3 of Chapter 7 of EPA's *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (also known as SW846). The current version (revision 4, 2004) of this chapter does not provide a specific method for performing a reactivity test, but indicates it must be selected based on the nature of the material being tested. The laboratory report did not provide information on the nature of the reactivity test employed.

3.3.2 Sample Preservation and Holding Times

All soil samples submitted for analysis of SVOCs, total metals, herbicides, pesticides, ignitability, reactive cyanide/sulfide, and TCLP lead were unpreserved and were cooled after collection, consistent with CAM requirements. Samples for analysis of VOCs were submitted in VOC vials and preserved with methanol, as appropriate. Samples were received at the laboratory at temperatures between 2.0 ºC and 4.2 ºC. All samples were analyzed within required holding times.

3.3.3 Method Blanks

Laboratory method blanks were submitted in each SDG and analyzed for VOCs, SVOCs, pesticides, herbicides, total metals, reactive cyanide and sulfide, and TCLP lead, as relevant to the specific SDG. No target compound was detected in any method blank sample. Method blanks were not analyzed for ignitability.

3.3.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD samples were not analyzed for most waste characterization samples. MS samples only (i.e., no MSD) were analyzed for TCLP lead, and the %REC was within acceptance criteria in all cases.

3.3.5 Laboratory Control/Laboratory Control Duplicate (LCS/LCSD) Samples

LCS and/or LCSD samples were included in each SGD for all waste characterization parameters except for ignitability. An LCS sample only (i.e., no LSCD) was analyzed for reactive cyanide/sulfide and TCLP lead samples.

In most cases, the %REC and, when applicable RPD, were within acceptance criteria. However, %REC was outside of acceptance criteria for a number of VOC, SVOC, herbicide, and pesticide analytes. The associated site sample results were qualified as estimated for the specific parameter that was outside of acceptance criteria. Some LCS/LCSD RPD were outside of acceptance criteria, but data were not qualified for this condition if the individual %REC was within acceptance criteria.

3.3.6 Surrogate Samples

Appropriate surrogate compounds were analyzed for each VOC, SVOC, pesticide, and herbicide analysis. In most cases, the %REC of the surrogate compounds was within acceptance criteria.

In some cases, the surrogate %REC was outside of acceptance criteria due to sample dilution; data were not qualified as a result of this occurrence. One SVOC surrogate %REC was outside of acceptance criteria without being due to dilution or other known cause. However, the remaining 5 surrogates were within acceptance criteria. As guidance indicates, SVOC data are qualified only if 2 surrogates of the same type (either acid extractable or base/neutral) are out of acceptance criteria, so data were not qualified as a result of this occurrence.

No surrogate compounds were analyzed for total metals, TCLP lead, ignitability, or reactive cyanide/sulfide.

3.3.7 Target Compound Identification

The dual column RPD was above the acceptance limit for several compounds in two of the pesticide analyses. When due to an obvious column interference, the laboratory assigned the lowest detected result to the sample and qualified the sample result with a "P." When not due to an obvious column interference, the laboratory assigned the highest detected result to the sample and qualified the sample result with a "P." These qualifications were retained.

The dual column RPD was above the acceptance limit for MCPP in one of the herbicide analyses, due to an obvious column interference. The laboratory assigned the lowest detected result to the sample and the sample results were qualified by the laboratory with a "P." This qualification was retained.

3.3.8 Duplicate Samples

Duplicate samples were analyzed for TCLP lead; the RPD met acceptance criteria in all cases.

Duplicate samples were analyzed for reactive cyanide/sulfide; RPD were not calculated because neither the original sample nor the duplicate sample was positive for reactivity.

Duplicate samples were not analyzed for other waste characterization parameters.

3.3.9 Miscellaneous

The initial calibration was reported to not meet minimum response factors for several VOCs in two SDG. These samples results were qualified as estimated.

In several VOC SDG, the internal standard response for one of the surrogates was below the acceptance criteria, leading to a possible high bias in all associated samples, which were qualified as estimated.

Information on heating protocols and correction of temperature for ambient barometric pressure for waste characteristics were not included in the laboratory reports, so were not specifically reviewed. Supplemental data from the laboratory is needed to review these factors.

Information on the percent solids, pH, and weight of extraction fluid for the TCLP lead analyses were also not included in the laboratory reports, so were not specifically reviewed. Supplemental data from the laboratory is needed to review these factors.

3.4 Data Usability

The usability of the soil data reviewed in the preceding sections is evaluated in this section. This evaluation typically considers the following criteria:

- Reported deviations from standard operating procedures,
- Reporting limits relative to Massachusetts Contingency Plan (MCP) Method 1 Standards,
- Potential occurrence of false negatives or false positives at target analytes concentrations at or near a MCP Method 1 Standard,
- Physical sample representativeness,
- Data set completeness.

The above factors are considered with regard to the analytical portion of the data review. Information on field aspects of the data usability assessment, such as adherence to standard sample collection procedures, should be reviewed separately and considered in concert with this review.

3.4.1 Deviations from Standard Operating Procedures

No deviations from laboratory standard operating procedures were noted in the analytical reports; each report was submitted with a CAM certification form indicating that CAM requirements were met and that presumptive certainty was attained. Therefore, data usability has not been adversely affected by deviations from laboratory standard operating procedures.

3.4.3 Reporting Limits

In many of the analyses, CAM-requested reporting limits have been met at concentrations below MCP Method 1 Standards. However, in many samples, because of constituent concentrations in the sample, dilution was needed to property quantify the sample. This dilution resulted in an elevated reporting limit sometimes above the MCP Method 1 standard. These occurrences have been noted in Table 1. Elevated reporting limits may make it difficult to evaluate compliance with the standard and may require resampling at locations where knowledge of the compliance status is essential.

3.4.5 Potential Occurrence of False Negatives or False Positives

False positives can occur if an analyte is inadvertently introduced into the sample during sampling or analysis. The potential for this to have occurred in project data as a result of laboratory analysis is anticipated to be remote. All SDG were accompanied by analysis of method blank samples and, without exception, method blanks did not contain detectable concentrations of target analytes.

False negatives can occur if the recovery of the analyte is impaired and, as a result, it is reported at a concentration below what is actually present in the sample. The potential for this occurrence is gauged by the recovery of surrogate compounds, LCS/LCSD, and MS/MSD samples.

In numerous instances in site data, %REC of surrogate compounds for a sample was below the acceptance criteria (often 0 percent) as a result of sample dilution. This condition did not result in qualification of the data, but the occurrence of this for specific samples is mentioned on Table 1. The absence of surrogate recovery data reduces the information available to ascertain whether the analyte recovery has been impacted. For critical samples in which this has occurred (i.e., those samples that are reported as non-detected or below MCP Method 1 standards and are used to determine compliance), results of LCS/LCSD and MS/MSD should be reviewed to determine if reductions in recovery occurred in these samples, as well. If so, the certainty of the non-detection or Method 1 standard compliance may be compromised, and confirmatory sampling may be in order.

In several instances, the %REC of surrogate compounds for a sample was below the acceptance criteria for reasons other than dilution, suggesting an impairment of analyte recovery. These samples were qualified as estimated ("J" or "UJ"). Any estimated concentration or reporting limit being used to determine compliance should be evaluated as to whether the sample result is representative and if confirmatory sampling is needed.

3.4.6 Physical Sample Representativeness

The analytical laboratory reports did not indicate any physical problems or anomalies in the samples.

3.4.7 Data set completeness.

Overall, the data set for PCB and waste characterization samples is complete, with one possible exception of the TCLP data for pesticides (refer to Section 3.3.1).

4.0 OVERALL DATA USABILITY

Based on the Tier II data review of the laboratory data for the City Pier site, it is concluded that the data for the site are usable for their intended purpose of site characterization. No unusual trends or anomalies were noted in the data, no significant analytical data gaps were identified, and no gross failures in sample handling, storage, preservation, or analysis occurred.

Some data were qualified as estimated as a result of data quality limitations, such as recovery of surrogate or LCS/LCSD sample compounds outside of acceptance criteria. The data qualifiers identified on Table 1 should be transferred to data summary tables to convey the limitations identified. Use of these data for critical decisions should be accompanied by a review of these limitations to ensure that the reported results appropriately represent site conditions.

In addition, some factors suggest possible limits to the data but did not result in data qualification, such as the absence of surrogate recovery as a result of sample dilution. These

factors should be kept in mind if using the data for critical decisions. Table 1 should also be made available to data users to identify these other limitations that do not result in data qualification.

TABLE

TABLE 1
Tier II Data Validation
City Pier - Davol Street
Fall River, Massachusetts

Lab/ID	Medium	Sample IDs	Number of Analyzed Samples	Sample Collection Date	Was MCP Analytical Method Report Certification Form Provided?	Was Presumptive Certainty Upheld (CAM-compliant)?	Analyses	Analysis Date/ Holding Time	Sample Preservation/ Temperature	Method Blanks	Surrogate Samples	Matrix Spike, Matrix Spike Duplicate	Laboratory Control Samples (LCS)	Other	Action
L1017416	Soil	2-A (0-1'), 3-B (0-1'), 4-A (0-1'), 4-B (0-1'), 5-A (0-1'), 6-A (0-1'), 7-A (0-1'), 8-A (0-1'), 9-A (0-1'), 10-A (0-1'); 11-A (0-1'), 11-B (0-1'), 12-A (0-1'), 12-B (0-1'), 13-A (0-1'), 13-B (0-1'), 14-A (0-1'), 14-B (0-1'), 16-B (0-1')	19	11/3/2010	Yes	Yes	Polychlorinated biphenyls (PCBs) as Aroclors by EPA Method 8082/3540C	11/8/2010: 5 days. MCP requirements are 1 year to extraction; 40 days to analysis)	Unpreserved; received at 2.5 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	2,4,5,6-Tetrachloro-m-xylenes (TCMX) and decachlorobiphenyl (DCB) applied as surrogates. Percent recoverable (%REC) within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and relative percent difference (RPD) within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	None	None
L1017418	Soil	15-B (0-1'), 17-A (0-1'), 17-B (0-1'), 18-A (0-1'), 18-B (0-1'), 19-A (0-1'), 19-B (0-1'), 20-A (0-1'), 20-B (0-1'), 21-A (0-1'), 21-B (0-1'), 22-A (0-1'), 22-B (0-1'), 23-A (0-1'), 23-B (0-1'), 24-A (0-1'), 24-B (0-1'), 25-B (0-1'), 25-C (0-1')	19	11/3/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/9-10/2010: 6-7 days	Unpreserved; received at 2.1 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	TCMX and DCB as surrogates; %REC within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Sample 15-B had elevated reporting limits due to dilution.	None
L1017421	Soil	15-B (1-2'), 17-A (1-2'), 17-B (1-2'), 18-A (1-2'), 18-B (1-2'), 19-A (1-2'), 19-B (1-2'), 20-A (1-2'), 20-B (1-2'), 21-A (1-2'), 21-B (1-2'), 22-A (1-2'), 22-B (1-2'), 23-A (1-2'), 23-B (1-2'), 23-C (1-2'), 24-B (1-2'), 24-C (1-2'), 25-B (1-2'). Only sample 15B analyzed; remainder held.	1	11/3/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	Extraction: 12/23/2010 (50 days); analyses: 12/28/2010	Unpreserved; received at 2.5 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	TCMX and DCB as surrogates; %REC within acceptance limits.	MS/MSD samples not analyzed	The LCS/LCSD RPD associated with sample 15-B (1-2') is above the acceptance criteria for Aroclor 1016 (38%) and Aroclor 1260 (34%).	None	None
L1017624	Soil	2-D (0-1'), 3-D (0-1'), 4-D (0-1'), 5-D (0-1'), 6-D (0-1'), 7-D (0-1'), 9-D (0-1'), DUP-J, 10-D (0-1'), 11-D (0-1'), 12-D (0-1') 13-D (0-1'), 14-D (0-1'), 15-D (0-1'), DUP-K, 10-F (0-1'), 13-F (0-1'), 15-F (0-1'), 6-F (0-1').	19	11/4/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/10-11/2010: 6-7 days	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC for samples 5-D, 6-D, 7-D, 9-D, 10-D, 11-D, 12-D, 13-F, and 6-F: are below the acceptance criteria for TCMX and DCB due to dilution.	MS/MSD samples not analyzed; dilution of sample would have caused the spike compounds to be diluted below the range of calibration.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 5-D, 6-D,7D, 9,D, 10-D, 11-D, 12-D, 13-F, and 6-F: one or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	None
L1017631	Soil	2-C (0-1'), 7-C (0-1'), 8-C (0-1'), 9-C (0-1'), 10-C (0-1'), 11-C (0-1'), 12-C (0-1'), 13-C (0-1'), 14-C (0-1'), 15-C (0-1'), 17-C (0-1'), 18-C (0-1'), 19-C (0-1'), 20-C (0-1'), 21-C (0-1'), 23-C (0-1'); 24-C (0-1'), DUP-A, DUP-C.	19	11/3-4/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/10-12, 15/2010: (6 to 12 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC for samples 12-C and DUP-C are below the acceptance criteria for TCMX and DCB due to dilution.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 7-C, 9-C, 12-C, and DUP-C: One or more of the target analytes did not achieve the requested CAM reporting limit due to sample dilution. **The dual column RPD for 18-C (0-1') is above the acceptance criteria for Aroclor 1254; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**Qualify Aroclor 1254 result for sample 18-C as "P".**
L1017639	Soil	3-C (0-1'), 4-C (0-1'), 5-C (0-1'), 6-C (0-1'), 1-C (0-1'), 3-E (0-1'), 2-E (0-1'), 4-E (0-1'), 5-E (0-1'), 7-E (0-1'), 8-E (0-1'), 9-E (0-1'), DUP-E, 11-E (0-1'), 13-E (0-1'), 14-E (0-1'), DUP-G, 15-E (0-1'), 1-D (0-1')	19	11/4/2011	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/11/2010 (7 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected	Surrogate %REC for samples 3-E, 4-E, 5-E, 7-E, 8-E, 9-E, 11-E, 13-E, and DUP-E are below the acceptance criteria for TCMX and DCB due to dilution.	**The MS/MSD %REC for Aroclor 1016 (268%/240%) and Aroclor 1260 (149%/150%) performed on sample 7-E are above the method acceptance criteria due to interference with Aroclor 1248 present in the sample.**	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 2-E through 5-E, 7-E through 11-E, 13-E, 1-D and DUP-E: one or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	**Qualify Aroclor 1016 and Aroclor 1260 detections in sample 7-E as estimated ("J").**
L1017647	Soil	6-G (0-1'), 7-G (0-1'), 8-G (0-1'), 9-F (0-1'), 11-G (0-1'), 11-H (0-1'), 14-H (0-1'), 15-G (0-1'), 15-H (0-1'), DUP-M, 5-I (0-1'), 6-I (0-1'), 7-I (0-1'), 11-I (0-1'), 13-I (0-1'), 14-I (0-1'), 15-I (0-1'), 16-I (0-1'), 18-I (0-1')	19	11/5/2011	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/12-15/2010 (7-10 days)	Unpreserved; received at 2.3 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC for samples 5-G, 7-G, 9-F, 14-H, 15-H, 5-I, and 6-I are below the acceptance criteria for TCMX and DCB due to dilution.	MS/MSD samples not analyzed; dilution of sample would have caused the spike compounds to be diluted below the range of calibration.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 5-G, 7-G, 9-F, 14-H, 15-H, 5-I, and 6-I : one or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	None
L1017648	Soil	17-I (0-1'), DUP-O, 19-I (0-1'), 20-I (0-1'), 22-I (0-1'), 23-I (0-1'), 24-I (0-1'), 25-I (0-1'), 26-I (0-1'), 27-I (0-1'), 28-I (0-1'), 28-J (0-1'), 29-I (0-1'), 30-I (0-1'), 30-J (0-1'), 31-I (0-1'), 31-J (0-1'), 17-J (0-1'), 20-J (0-1')	19	11/5/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/12-13/2010 (7-8 days)	Unpreserved; received at 2.3 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC for samples 26-I, 27-I, 28-I, 28-J, 29-I, 30-I, 17-J, and 20-J are below the acceptance criteria for TCMX and DCB (0%) due to dilution. The surrogate %REC for the method blank is outside the individual acceptance criteria for DCB (154%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 26-I, 27-I, 28-I, 28-J, 29-I, 30-I, 17-J, and 20-J : One or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution. **The dual column RPD for 17-I, 19-I, 23-I, 25-I, and 30-J is above the acceptance criteria for Aroclor 1260; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**Qualify Aroclor 1260 results for samples 17-I, 19-I, 23-I, 25-I, and 30-J as "P."**
L1017650	Soil	6-G (1-2'), 7-G (1-2'), 8-G (1-2'), 11-G (1-2'), 11-H (1-2'), 14-H (1-2'), 15-G (1-2'), 15-H (1-2'), DUP-N, 5-I (1-2'), 6-I (1-2'), 7-I (1-2'), 11-I (1-2'), 13-I (1-2'), 14-I (1-2'), 15-I (1-2'), 16-I (1-2'), 18-I (1-2'), 22-I (1-2'). Only samples 6-G, 7-G, 11-H, 14-H, 15-H, 5-I, 6-I, and 13-I analyzed	8	11/5/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/28-30/2010 (53-55 days)	Unpreserved; received at 4.2 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC for samples 11-H and 13-I are below the acceptance criteria for TCMX an DCB (0%) due to dilution.	No MS/MSD samples analyzed	The LCS/LCSD RPD associated with samples 6-G, 7-G, 11-H, 14-H, 15-H, 5-I, 6-I, and 13-I is above the acceptance criteria for Aroclor 1260 (52%).	Samples 11-H, 15-H, and 13-I: One or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution. **The dual column RPD for sample 15-H is above the acceptance criteria for Aroclor 1260; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".** **The dual column RPD for sample 13-I is above the acceptance criteria for Aroclor 1248; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**Qualify Aroclor 1260 result for sample 15-H as "P".** **Qualify Aroclor 1248 result for sample 13-I as "P".**
L1017651	Soil	17-I (1-2'), DUP-P (1-2'), 23-I (1-2'), 24-I (1-2'), 25-I (1-2'), 26-I (1-2'), 27-I (1-2'), 28-I (1-2'), 28-J (1-2'), 29-I (1-2'), 30-I (1-2'), 30-J (1-2'), 31-I (1-2'), 31-J (1-2'), 20-J (1-2'), 21-J (1-2'), 23-J (1-2'), 25-J (1-2'), 27-J (1-2'). Only samples 24-I, 25-I, 26-I, 27-I, 28-I, 28-J, 29-I, 20-J, 21-J, 23-J, 25-J, 27-J analyzed; remainder held	12	11/5/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/28-30/2010 (53-55 days) CHECK EXTRACTION DATE	Unpreserved; received at 4.2 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	**Surrogate %REC for sample 27-I is outside the individual acceptance criteria for TCMX (157%).** Surrogate %REC for samples 28-I, 29-I, 23-J, and 27-J are below the acceptance criteria TCMX and DCB (0%) due to dilution.	No MS/MSD samples analyzed	The LCS/LCSD RPD associated with samples 24-I, 25-I, 26-I, 27-I, 28-I, 28-J, 29-I, 20-J, 21-J, 23-J, 25-J, and 27-J is above the acceptance criteria for Aroclor 1260 (52%).	Samples 24-I, 28-I, 29-I, 23-J, and 27J: One or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution. **The dual column RPD for sample 28-J is above the acceptance criteria for Aroclor 1260; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**Qualify all detected Aroclor results for sample 27-I as estimated ("J")** **Qualify the Aroclor 1260 result for sample 28-J as "P".**

TABLE 1
Tier II Data Validation
City Pier - Davol Street
Fall River, Massachusetts

Lab/ID	Medium	Sample IDs	Number of Analyzed Samples	Sample Collection Date	Was MCP Analytical Method Report Certification Form Provided?	Was Presumptive Certainty Upheld (CAM-compliant)?	Analyses	Analysis Date/ Holding Time	Sample Preservation/ Temperature	Method Blanks	Surrogate Samples	Matrix Spike, Matrix Spike Duplicate	Laboratory Control Samples (LCS)	Other	Action
L1017699	Soil	3-B (2-3'), 4-B (2-3'), 4-A (2-3'), 5-A (2-3'), 6-A (2-3'), 2-C (2-3'), 3-C (2-3'), 4-C (2-3'), 5-C (2-3'), 6-C (2-3'), 1-C (2-3'), 2-E (2-3'), 3-E (2-3'), 4-E (2-3'), 5-E (2-3'), 1-D (2-3'), 2-D (2-3'), 3-D (2-3'), 4-D (2-3'). Only samples 2E, 4-E, and 5-E analyzed; remainder held	3	11/3-4/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	1/25/2011 (81-82 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for sample 2-E are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Sample 2-E: one or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	None
L1017700	Soil	13-C (1-2'), 13-C (1-2'), 15-C (1-2'), 17-C (1-2'), 18-C (1-2'), 19-C (1-2'), 20-C (1-2'), 21-C (1-2'), DUP-B, 7-C (1-2'), 8-C (1-2'), 9-C (1-2'), 10-C (1-2'), 11-C (1-2'), 12-C (1-2'), DUP-C, 2-C (1-2'), 3-C (1-2'), 4-C (1-2'). Only samples 7-C, 9-C, 12-C, and DUP-C were analyzed; remainder held	4	11/4/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/27/2010 (53 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	TCMX and DCB as surrogates; %REC within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	The LCS/LCSD RPD associated with samples 7-C, 9-C, 12-C, and DUP-C is above the acceptance criteria for Aroclor 1016 (3.3%).	None	None
L1017701	Soil	5-C (1-2'), 6-C (1-2'), 1-C (1-2'), 2-E (1-2'), 3-E (1-2'), 4-E (1-2'), 5-E (1-2'), 7-E (1-2'), 8-E (1-2'), 9-E (1-2'), DUP-E, 11-E (1-2'), 13-E (1-2'), 14-E (1-2'), DUP-H, 15-E (1-2'), 1-D (1-2'), 2-D (1-2'), 3-D (1-2'). Only samples 2-E, 3-E, 4-E, 5-E, 7-E, 8-E, 9-E, DUP-F, 11-E, and 13-E were analyzed; remainder held	10	11/4/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/27-29/2010 (53-55 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 2-E, 4-E, 7-E, 9-E, and DUP-F are below the acceptance criteria for TCMX and DCB (0%) due to dilution. **Surrogate %REC for sample 5-E is outside the individual acceptance criteria for DCB (151%).**	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	The LCS/LCSD RPD for all 10 samples is above the acceptance criteria for Aroclor 1016 (3.3%).	Samples 2-E, 4-E, 7-E, 8-E, 9-E, DUP-F, and 11-E: one or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	**Qualify all detected Aroclor results for sample 5-E as estimated ("J").**
L1017702	Soil	4-D (1-2'), 5-D (1-2'), 6-D (1-2'), 7-D (1-2'), 9-D (1-2'), DUP-L, 10-D (1-2'), 11-D (1-2'), 12-D (1-2'), 13-D (1-2'), 14-D (1-2'), 15-D (1-2'), DUP-L, 10-F (1-2'), 13-F (1-2'), 15-F (1-2'), 6-F (1-2'), 9-F (1-2'). Only samples 5-D, 6-D, 9-D, 10-D, 12-D, 13-F, 6-F, and 9-F analyzed; remainder held	8	11/4/2011	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/27-29/2010 (53-55 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 13-F and 9-F are below the acceptance criteria for TCMX and DCB (0%) due to dilution. **The surrogate %REC for sample 6-F is outside the individual acceptance criteria for DCB (157%).**	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	The LCS1/LCSD RPD associated with samples 5-D, 6-D, 9-D, 10-D, 12-D, and 13-F is above the acceptance criteria for Aroclor 1016 (33%). The LCS/LCSD RPD associated with samples 6-F and 9-F is above the acceptance criteria for Aroclor 1016 (36%) and Aroclor 1260 (53%).	Samples 5-D, 6-D, 13-F, and 9-F: one or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	**Qualify all detected Aroclor results for sample 6-F as estimated ("J").**
L1017847	Soil	16-J (0-1'), 21-J (0-1'), 23-J (0-1'), 25-J (0-1'), 27-J (0-1'), DUP-Q, 9-J (0-1'), 12-J (0-1'), 13-J (0-1'), 3-J (0-1'), 4-J (0-1'), 5-J (0-1'), 6-J (0-1'), 7-J (0-1.'), 4-K (0-1'), 5-K (0-1'), 7-K (0-1'), 8-K (0-1'), 12-K (0-1')	19	11/5/2010; 11/9/2010	Yes	Yes	Polychlorinated biphenyls (PCBs) as Aroclors by EPA Method 8082/3540C	11/15/2010; 11/17/2010 (6-12 days)	Unpreserved; received at 2.6 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 21-J, 23-J, 25-J, 27-J, 4-J, 5-J, 6-J, and 4-K are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 21-J, 23-J, 25-J, 27-J, 4-J, 5-J, 6-J, and 4-K : One or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	None
L1017848	Soil	13-K (0-1'), 14-K (0-1'), 15-K (0-1'), 16-K (0-1'), 17-K (0-1'), 18-K (0-1'), 19-K (0-1'), 20-K (0-1'), 21-K (0-1'), DUP-S, 22-K (0-1'), 23-K (0-1'), 24-K (0-1'), 25-K (0-1'), 26-K (0-1'), 27-K (0-1'), 28-K (0-1'), 29-K (0-1'), 30-K (0-1')	19	11/9/2011	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/13-15/2010 (4-6 days)	Unpreserved; received at 2.6 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 13-K, 14-K, 16-K through 21-K, 23-K through 29-K, and DUP-S are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	MS/MSD samples not analyzed; dilution of sample would have caused the spike compounds to be diluted below the range of calibration.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 13-K, 14-K, 16-K through 21-K, 23-K through 29-K, and DUP-S : one or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	None
L1017849	Soil	31-K (0-1'), 23-L (0-1'), 24-L (0-1'), 25-L (0-1'), 26-L (0-1'), 27-L (0-1'), 30-L (0-1'), 31-L (0-1'), 15-L (0-1'), 16-L (0-1'), 18-L (0-1'), 19-L (0-1'), 20-L (0-1'), 21-L (0-1'), DUP-U, 8-L (0-1'), 9-L (0-1'), 10-L (0-1'), 11-L (0-1')	19	11/9/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/13/2010; 11/16-17/2010 (4-8 days)	Unpreserved; received at 3.4 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 23-L through 27-L, 18-L, 19-L, 20-L, 8-L, 9-L, 10-L, and DUP-U are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	MS/MSD samples not analyzed; dilution of sample would have caused the spike compounds to be diluted below the range of calibration.	The LCS/LCSD RPD for all samples except 31-K [18 samples] is above the acceptance criteria for Aroclor 1260 (32%).	Samples 23-L through 27L, 15-L, 26-L 18-L through 21-L, 8-L through 10-L, and DUP-U: one or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution. **The dual column RPDs for 31-L, 21-L, and 11-L are above the acceptance criteria for Aroclor 1260;however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**Qualify Aroclor 1260 results for samples 31-L, 21-L, and 11-L as "P".**
L1017850	Soil	12-L (0-1'), 13-L (0-1'), 6-M (0-1'), 7-M (0-1'), 8-M (0-1'), 9-M (0-1'), 10-M (0-1'), 11-M (0-1'), 12-M (0-1'), 13-M (0-1'), 14-M (0-1'), DUP-W, 15-M (0-1'), 16-M (0-1'), 17-M (0-1'), 18-M (0-1'), 19-M (0-1'), 20-M (0-1'), 21-M (0-1')	19	11/9/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/15/2010 11/17/2010 (6-8 days)	Unpreserved; received at 2.4 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 7-M through 9-M, 11-M through 13-M, 15-M, 16-M, 21-M and DUP-W, are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	**The MSD %REC for Aroclor 1260 (234%) performed on samples 10-M is above the method acceptance criteria due to interference with Aroclor 1254 present in the sample. In addition, the associated MS/MSD RPD is above the acceptance criteria for Aroclor 1260 (71%).**	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 12-L, 7-M through 13-M, DUP-W, 15-M, 16-M, and 20-M: One or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	**Quality an Aroclor 1260 detection in sample 10-M as estimated ("J").**
L1017851	Soil	16-J (1-2'), 17-J (1-2'), DUP-R, 9-J (1-2'), 12-J (1-2'), 13-J (1-2'), 3-J (1-2'), 4-J (1-2'), 5-J (1-2'), 6-J (1-2'), 7-J (1-2'), 4-K (1-2'), 5-K (1-2'), 7-K (1-2'), 8-K (1-2'), 12-K (1-2'), 13-K (1-2'), 14-K (1-2'), 15-K (1-2'). Only samples 16-J, 17-J, DUP-R, 9-J, 12-J, 4-J, 5-J, 6-J, 4-K, 8-K, 13-K, and 14-K, were analyzed; remainder held	12	11/5/2010; 11/9/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/27/2010; 12/28/2010 (48-53 days)	Unpreserved; received at 3.3 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	**The surrogate %REC for DUP-R is outside the individual acceptance criteria for DCB (206%).** Surrogate %REC for samples 12-J, 4-J, and 4-K are below the acceptance criteria for TCMX ad DCB (0%) due to dilution.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	The LCS/LCSD RPD for all 12 samples are above the acceptance criteria for Aroclor 1016 (36%) and Aroclor 1260 (53%).	Samples DUP-R, 12-J, 4-J, and 4-K: one or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution. **The dual column RPDs for DUP-R and 12-J are above the acceptance criteria for Aroclor 1260; however, no obvious column interferences are present. The higher of the two results are reported and are qualified with a "P."**	**Qualify all detected Aroclor results for sample DUP-R as estimated ("J").** **Qualify the Aroclor 1260 results for samples DUP-R and 12-J as "P".**
L1017852	Soil	16-K (1-2'), 17-K (1-2') 18-K (1-2'), 19-K (1-2'), 20-K (1-2'), 21-K (1-2'), DUP-T, 22-K (1-2'), 23-K (1-2'), 24-K (1-2'), 25-K (1-2'), 26-K (1-2'), 27-K (1-2'), 28-K (1-2'), 29-K (1-2'), 30-K (1-2'), 31-K (1-2'), 23-L (1-2'), 24-L (1-2'). All except 18-K, 22-K, and 30-K analyzed	16	11/9/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/27-29/2010 (48-50 days)	Unpreserved; received at 3.3 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 16-K, 20-K, 21-K, DUP-T, 23-K, 25-K, and 28-K are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	The LCS/LCSD RPD associated with 16-K, 17-K, 20-K, 21-K, DUP-T, and 23-K is above the acceptance criteria for Aroclor 1016 (36%) and Aroclor 1260 (53%).	Samples 16-K, 20-K, 21-K, DUP-T, 23-K, 25-K, 27-K, 28-K and 24-L, One or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	None

TABLE I
Tier II Data Validation
City Pier - Davol Street
Fall River, Massachusetts

Lab/ID	Medium	Sample IDs	Number of Analyzed Samples	Sample Collection Date	Was MCP Analytical Method Report Certification Form Provided?	Was Presumptive Certainty Upheld (CAM-compliant)?	Analyses	Analysis Date/ Holding Time	Sample Preservation/ Temperature	Method Blanks	Surrogate Samples	Matrix Spike, Matrix Spike Duplicate	Laboratory Control Samples (LCS)	Other	Action
L1017853	Soil	25-L (1-2'), 26-L (1-2'), 27-L (1-2'), 30-L (1-2'), 31-L (1-2'), 15-L (1-2'), 16-L (1-2'), 18-L (1-2'), 20-L (1-2'), DUP-V (1-2'), 8-L (1-2'), 9-L (1-2'), 10-L (1-2'), 11-L (1-2'), 12-L (1-2'), 13-L (1-2'), 6-M (1-2'), 7-M (1-2'), 8-M (1-2'). All except 31-L, 11-L, 13-L, and 6-M analyzed	15	11/9/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/27-29/2010 (48-50 days)	Unpreserved; received at 3.4 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for 8-L are below the acceptance criteria for TCMX and DCB (0%) due to dilution. **The surrogate %REC for 8-M is outside the individual acceptance criteria for DCB (151%).**	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	The LCS/LCSD RPD associated with samples 27-L, 10-L, 12-L and 7-M is above the acceptance criteria for Aroclor 1016 (38%) and Aroclor 1260 (34%).	Sample 8-L: One or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution. **The dual column RPD for sample 27-L is above the acceptance criteria for Aroclor 1260; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".** **The dual column RPD for sample DUP-V is above the acceptance criteria for Aroclor 1254; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**Qualify all detected Aroclor results for sample 8-M as estimated ("J")** **Qualify the Aroclor 1260 result for Sample 27-L as "P".** **Qualify the Aroclor 1254 result for sample DUP-V as "P".**
L1017961	Soil	2-J (0-1'), 2-K (0-1'), 2-L (0-1'), 2-M (0-1'), 2-N (0-1'), 2-O (0-1'), 2-P (0-1'), 2-R (0-1'), 2-S (0-1'), 2-T (0-1'), 2-Q (0-1'), 2-U (0-1'), 2-V (0-1'), 3-P (0-1'), 2-W (0-1'), 2-X (0-1'), DUP-AA	17	11/10/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/15/2010; 11/17/2010 (35-37 days)	Unpreserved; received at 3.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 3-P and DUP-AA are below the acceptance criteria for TCMX and DCB(0%) due to dilution.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 3-P and DUP-AA: One or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	None
L1017962	Soil	23-M (0-1'), 24-M (0-1'), 25-M (0-1'), 26-M (0-1'), 29-M (0-1'), 30-M (0-1'), 31-M (0-1'), 33-M (0-1'), 27-M (0-1'), 28-M (0-1'), 33-N (0-1'), 33-O (0-1'), 34-O (0-1'), 34-P (0-1'), 34-Q (0-1'), 35-R (0-1'), DUP-Y, 22-M (0-1'), 1-J (0-1')	19	11/09-10/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/17/2010 (7-8 days)	Unpreserved; received at 2.8 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 22-M through 30M are below the acceptance criteria for TCMX and DCB (0%) due to dilution. The surrogate %REC for the MSD performed on sample 33-N is outside the individual acceptance criteria for DCB (154%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 22-M through 31-M: One or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	None
L1017965	Soil	2-P (1-2'), 2-R (1-2'), 2-S (1-2'), 2-T (1-2'), 2-Q (1-2'), 2-U (1-2'), 2-V (1-2'), 3-P (1-2'), 2-W (1-2'), 2-X (1-2'), DUP-BB, 3-Q (1-2'), 3-R (1-2'), 3-S (1-2'), 3-T (1-2'), 3-U (1-2'), 3-V (1-2'), 3-W (1-2'), 3-X (1-2'). Only 2-V, 3-P, DUP-BB, 3-R, and 3-T analyzed, remainder held	5	11/10/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/28-29/2010 (48-49 days)	Unpreserved; received at 2.8 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 3-P and DUP-BB are below the acceptance criteria for TCMX and DCB (0%) due to dilution. The surrogate %REC for the LCS/LCSD associated with samples 2-V, 3-P, DUP-BB, 3-R, and 3-T is outside the individual acceptance criteria for DCB (165% and 173%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 3-P and DUP-BB: One or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	None
L1017966	Soil	2-V (2-3'), 2-O (2-3'), 2-P (2-3'), 2-Q (2-3'), 2-R (2-3'), 2-S (2-3'), 2-T (2-3'), 2-U (2-3'), 2-V (2-3'), 2-0 (2-3'), 2-P (2-3'), 2-Q (2-3'), 2-R (2-3'), 3-P (2-3'), 2-W (2-3'), 2-X (2-3'), DUP-S, 3-Q (2-3'), 3-R (2-3'), 3-S (2-3'0, 3-T (2-3'), 3-U (2-3'), 3-V (2-3'). Only 3-P (2-3') analyzed; remainder held	1	11/10/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	1/25/2011 (76 days)	Unpreserved; received at 2.1 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	TCMX and DCB as surrogates; %REC within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Sample 3-P: one or more of the target analytes did not achieve the requested CAM reporting limits due to sample dilution.	None
L101967	Soil	5-D (2-3'), 6-F (2-3'), 6-D (2-3'), 6-G (2-3'), 5-I (2-3'), 6-I (2-3'), 3-J (2-3'), 4-J (2-3'), 5-J (2-3'), 6-J (2-3'), 4-K (2-3'), 5-K (2-3'), DUP-1 (2-3'), 6-M (2-3'), 1-J (2-3'), 2-J (2-3'), 2-K (2-3'), 2-L (2-3'), 2-M (2-3'), 2-N (2-3'). Only samples 5-D, 6-D, 5-I, 4-J, 4-K, DUP-1, 2-N analyzed, remainder held	7	11/05?2010; 11/09-10?2010	Yes	Yes	Polychlorinated biphenyls (PCBs) as Aroclors by EPA Method 8082/3540C	01/25-26/2011 (76-82 days)	Unpreserved; received at 2.1 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 4-J, 4-K, and DUP-1 are below the acceptance criteria for TCMX and DCB (0%) due to dilution. The surrogate %REC for the method blank associated with sample 4-J is outside the acceptance criteria for TCMX (29%). Surrogate %REC for the MSD performed on sample 2-N are below the acceptance criteria for TCMX (22%/19%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	For samples 5-I, 4-J, 4-K, and DUP-1 , one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None
L1017968	Soil	35-R (1-2'), DUP-Z (1-2'), 22-M (1-2'), 2-J (1-2'), 2-K (1-2'), 1-J (1-2'), 2-L (1-2'), 2-M (1-2), 2-N (1-2'), 1-O (1-2'), 29-M (1-2'), 30-M (1-2'), 31-M (1-2'), 33-M (1-2'), 33-N (1-2'), 33-O (1-2'), 34-O (1-2'), 34-P (1-2'), 34-Q (1-2'). Only samples 22-M, 29-M, 30-M, and 33-N analyzed; remainder held	4	11/10/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/28/2010 (48 days)	Unpreserved; received at 2.1 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	The surrogate %REC for the method blank are above the acceptance criteria for TCMX (168%) and DCB (169%). The surrogate %REC for the MSD performed on sample 33-N are above the acceptance criteria for DCB (173%/164%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 22-M, 29-M, and 33-N: one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None
L1017969	Soil	9-M (1-2'), 10-M (1-2'), 11-M (1-2'), 12-M (1-2'), 13-M (1-2'), 14-M (1-2'), DUP-X (1-2'), 15-M (1-2'), 16-M (1-2'), 18-M (1-2'), 19-M (1-2'), 20-M (1-2'), 21-M (1-2'), 23-M (1-2'), 24-M (1-2'), 25-M (1-2'), 26-M (1-2'), 27-M (1-2'), and 28-M (1-2'). All samples except 14M, 19-M, and 21-M were analyzed; those held	16	11/9/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/28-29/2010 (49-50 days)	Unpreserved; received at 3.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 9-M, 10-M, and DUP-X are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	MS/MSD samples not analyzed; dilution of sample would have caused the spike compounds to be diluted below the range of calibration.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 9-M, 10-M, 11-M, DUP-X, 15-M, and 23-M: One or more of the target analytes did not achieve the requested CAM reporting limits due to dilution. **The dual column RPD for samples 12-M, 15-M, 20-M, 23-M, 26-M, 27-M, 28-M is above the acceptance criteria for Aroclor 1260; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**Qualify Aroclor 1260 results for samples 12-M, 15-M, 20-M, 23-M, 26-M, 27-M, 28-M as "P".**
L1018080	Soil	5-DD (0-1'), 5-N (0-1'), 5-O (0-1'), 5-Q (0-1'), 5-R (0-1'), 6-N (0-1'), 6-O (0-1'), 6-Q (0-1'), 6-R (0-1'), 6-S (0-1'), 6-V (0-1'), 6-W (0-1'), 6-X (0-1'), 6-BB (0-1'), 6-DD (0-1'), 6-EE (0-1'), 6-FF (0-1'), 6-GG (0-1'), 6-HH (0-1'), DUP-11	20	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/18-19/2010 (7-8 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	The surrogate %REC for the MSD performed on sample 6-HH is outside the acceptance criteria for DCB (154%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	The LCS/LCSD RPD for all 20 samples is above the acceptance criteria for Aroclor 1016 (35%).	Samples 6-X and 6-HH: one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None
L1018081	Soil	4-EE (0-1'), 4-FF (0-1'), 4-GG (0-1'), 4-HH (0-1'), 4-JJ (0-1'), 5-EE (0-1'), 5-FF (0-1'), 5-GG (0-1'), 5-HH (0-1'), 5-II (0-1'), 5-JJ (0-1'), 4-II (0-1'), DUP-88 (0-1'), 5-V (0-1'), 5-Y (0-1'), 5-Z (0-1'), 5-AA (0-1'), 5-BB (0-1'), 5-CC (0-1')	19	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/18-19/2010 (7-8 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	TCMX and DCB as surrogates; %REC within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 5-FF, 5-Y, and 5-Z: one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None
L1018082	Soil	3-FF (0-1'), 3-GG (0-1'), 3-HH (0-1'), 3-JJ (0-1'), 4-M (0-1'), 4-N (0-1'), 4-O (0-1'), 4-P (0-1'), 4-Q (0-1'), 4-S (0-1'), 4-T (0-1'), 4-V (0-1'), 4-X (0-1'), 4-Y (0-1'), 4-AA (0-1'), 4-BB (0-1'), DUP-EE, 4-CC (0-1'), 4-DD (0-1')	19	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/18/2010 (7 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for sample 4-Q are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 4-P and 4-Q: one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None

TABLE 1
Tier II Data Validation
City Pier - Davol Street
Fall River, Massachusetts

Lab/ID	Medium	Sample IDs	Number of Analyzed Samples	Sample Collection Date	Was MCP Analytical Method Report Certification Form Provided?	Was Presumptive Certainty Upheld (CAM-compliant)?	Analyses	Analysis Date/ Holding Time	Sample Preservation/ Temperature	Method Blanks	Surrogate Samples	Matrix Spike, Matrix Spike Duplicate	Laboratory Control Samples (LCS)	Other	Action
L1018083		3-Q (0-1'), 3-R (0-1'), 3-S (0-1'), 3-T (0-1'), 3-U (0-1'), 3-V (0-1'), 3-W (0-1'), 3-X (0-1'), 3-Y (0-1'), 3-Z (0-1'), 3-CCC (0-1'), 3-BBB (0-1'), 3-AAA (0-1'), 3-L (0-1'), 3-M (0-1'), 3-N (0-1'), 3-DD (0-1'), 3-EE (0-1'), DUP-CC	19	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/18-19/2010 (7-8 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC for 3-N are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 3-R, 3-T, 3-M, and 3-N: one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None
L1018084		5-FF (2-3'), 5-GG (2-3'), 5-HH (2-3'), 5-II (2-3'), 5-JJ (2-3'), 4-II (2-3'), DUP-5 (2-3'), 5-V (2-3'), 5-Y 92-3'), 5-Z (2-3'), 5-AA 92-3'), 5-BB (2-3'), 5-CC (2-3'), 5-DD (2-3'), 5-N 92-3'), 5-O (2-3'), 5-Q 92-3'), 5-R (2-3'), DUP-6. Only sample 5-Z analyzed; remainder held	1	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	1/25/2010 (75 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	TCMX and DCB as surrogates; %REC within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	None	None
L1018085	Soil	5-HH (1-2'), 5-II (1-2'), 5-JJ (1-2'), 4-II (1-2'), DUP-HH, 5-V (1-2'), 5-Y (1-2'), 5-Z (1-2'), 5-AA (1-2'), 5-BB (1-2'), 5-DD (1-2'), 5-CC (1-2'), 5-N (1-2'), 5-O (1-2'), 5-Q (1-2'), 5-R (1-2'), 6-N (1-2'), 6-O (1-2'), 6-Q (1-2'). Only sample 5-Z analyzed; remainder held	1	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/28/2010 (47 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	TCMX and DCB as surrogates; %REC within acceptance limits.	No MS/MSD analyzed.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	None	None
L1018086	Soil	3-FF (2-3'), 4-P (2-3'), 4-Q (2-3'), 4-S (2-3'), 4-T (2-3'), 4-V (2-3'), 4-X (2-3'), 4-Y (2-3'), 4-AA (2-3'), 4-BB (2-3'), DUP-4, 4-CC (2-3'), 4-DD (2-3'), 4-EE (2-3'), 4-FF (2-3'), 4-GG (2-3'), 4-HH (2-3'), 4-JJ (2-3'), 5-E (2-3'). Only sample 4-Q analyzed; remainder held	1	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	1/25/2011 (75 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	TCMX and DCB as surrogates; %REC within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	None	None
L1018087	Soil	4-Q (1-2'), 4-S (1-2'), 4-T (1-2'), 4-V (1-2'), 4-X (1-2'), 4-Y (1-2'), 4-AA (1-2'), 4-BB (1-2'), DUP-FF, 4-CC (1-2'), 4-DD (1-2'), 4-EE (1-2'), 4-FF (1-2'), 4-GG (1-2'), 4-HH (1-2'), 4-JJ (1-2'), 5-EE (1-2'), 5-FF (1-2'), 5-GG (1-2'). Only sample 4-Q analyzed; remainder held	1	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/29/2010 (48 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC are below the acceptance criteria for 2,4,5,6-TCMX and DCB (0%) due to dilution.	No MS/MSD analyzed	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	One or more of the target analytes did not achieve the requested CAM reporting limits dilution.	None
L1018088	Soil	3-Y (1-2'), 3-Z (1-2'), 3-AAA (1-2'), 3-BBB (1-2'), 3-CCC (1-2'), 3-L (1-2'), 3-M (1-2'), 3-N (1-2'), 3-DD (1-2'), DUP-DD, 3-EE (1-2'), 3-FF (1-2'), 3-GG (1-2'), 3-HH (1-2'), 3-JJ (1-2'), 4-M (1-2'), 4-N (1-2'), 4-O (1-2'), 4-P (1-2'). Only samples 3-M and 3-N analyzed; remainder held	2	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/29/2010 (48 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC for 3-M and 3-N are below the acceptance criteria for 2,4,5,6-TCMX and DCB (0%) due to dilution.	No MS/MSD analyzed	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 3-M and 3-N: One or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None
L1018089	Soil	3-W (2-3'), 3-X (2-3'), 3-Y (2-3'), 3-Z (2-3'), 3-AA (2-3'), 3-BB (2-3'), 3-CC (2-3'), 3-L (2-3'), 3-M (2-3'), 3-N (2-3'), 3-DD (2-3'), 3-EE (2-3'), 3-GG (2-3'), 3-HH (2-3'), 3-JJ (2-3'), DUP-3, 4-M (2-3'), 4-N (2-3'), 4-O (2-3'). Only samples 3-M and 3-N analyzed; remainder held	2	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	1/25/2011 (75 days)	Unpreserved; received at 2.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC for 3-M and 3-N are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 3-M and 3-N: one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None
L1018183	Soil	11-X (0-1'), 11-Y (0-1'), 11-AA (0-1'), 12-X (0-1'), 12-Y (0-1'), 12-Z (0-1'), 12-AA (0-1'), 12-BB (0-1'), 12-DD (0-1'), 12-EE (0-1'), 12-FF (0-1'), 12-GG (0-1'), 12-HH (0-1'), 12-II (0-1'), 12-JJ (0-1'), 13-GG (0-1'), 13-HH (0-1'), 13-II 90-1'), DUP-QQ	19	11/12/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/19/10; 11/21/2010 (7-9 days)	Unpreserved; received at 3.0 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC for samples 12-II and 13-II are below the acceptance criteria for TCMX and DCB (0%) due to dilution.	MS/MSD samples not analyzed; dilution of sample would have caused the spike compounds to be diluted below the range of calibration.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 12-II and 13-II: one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution. **The dual column RPDs for samples 12-DD and 12-HH are above the acceptance criteria for Aroclor 1260; no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".** **The dual column RPD for sample 13-GG is above the acceptance criteria for Aroclor 1254; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**Qualify the Aroclor 1260 results for samples 12-DD and 12-HH as "P".** **Qualify the Aroclor 1254 results for sample 13-GG as "P".**
L1018187	Soil	10-X (0-1'), 10-Y (0-1'), 10-Z (0-1'), 10-AA (0-1'), 10-BB (0-1'), 10-CC (0-1'), 10-DD (0-1'), 10-EE (0-1'), 10-FF 90-1'), 10-GG (0-1'), DUP-OO, 10-HH (0-1'), 10-JJ (0-1'), 11-II (0-1'), 11-JJ (0-1'), 11-BB (0-1'), 11-DD (0-1'), 11-GG (0-1'), 11-FF (0-1')	19	11/2/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/20/2010; 11/22/2010 (18-20 days)	Unpreserved; received at 2.7 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	Surrogate %REC for 10-Z are below the acceptance criteria for TCMX and DCB (0%) due to dilution. The surrogate %REC for the LCS sample is outside the individual acceptance criteria for TCMX (151%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 10-Z, 10-AA, 10-FF, and DUP-OO: one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution. **The dual column RPD for 10-CC is above the acceptance criteria for Aroclor 1254; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**Qualify the Aroclor 1254 results in sample 10-CC as "P"**
L1018189	Soil	8-Z (0-1'), 8-CC (0-1'), 8-DD (0-1'), 8-FF (0-1'), 8-GG (0-1'), 8-HH (0-1'), 8-II (0-1'), 8-JJ (0-1'), 9-GG 90-1'), 9-HH 90-1'), 9-JJ (0-1'), 9-BB (0-1'), 9-CC (0-1'), 9-DD (0-1'), 9-EE (0-1'), DUP-MM, 9-X (0-1'), 8-AA (0-1'), 8-BB (0-1')	19	11/12/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/19/2010; 11/22/2010 (7-10 days)	Unpreserved; received at 2.8 C	Analyzed for all Aroclors (1016 - 1268); no Aroclors detected.	**The surrogate %REC for sample 9-HH is outside the acceptance criteria for TCMX (171%).**	**The MS/MSD %REC for Aroclor 1260 performed on sample 9-EE is above the method acceptance criteria due to interference with Aroclor 1254 present in the sample (174%/165%).**	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 8-DD, 8-HH, 9-HH, and 9-X: one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution. **The dual column RPD for sample 9-DD is above the acceptance criteria for Aroclor 1254; however, obvious column interferences are present. Due to these interferences, the lower of the two values is reported and qualified with a "P".**	**Qualify all detected Aroclor results for sample 9-HH as estimated ("J").** **Qualify an Aroclor-1260 detection in sample 9-EE as estimated ("J").** **Qualify the Aroclor 1254 results for sample 9-DD as "P".**

TABLE 1
Tier II Data Validation
City Pier - Davol Street
Fall River, Massachusetts

Lab/ID	Medium	Sample IDs	Number of Analyzed Samples	Sample Collection Date	Was MCP Analytical Method Report Certification Form Provided?	Was Presumptive Certainty Upheld (CAM-compliant)?	Analyses	Analysis Date/ Holding Time	Sample Preservation/ Temperature	Method Blanks	Surrogate Samples	Matrix Spike, Matrix Spike Duplicate	Laboratory Control Samples (LCS)	Other	Action
L1018093	Soil	6-HH (0-1'), 6-II (0-1'), 6-JJ (0-1'), 7-DD (0-1'), 7-EE (0-1'), 7-FF (0-1'), 7-GG (0-1'), 7-HH (0-1'), 7-II (0-1'), 7-JJ (0-1'), 6-Y (0-1'), 7-AA (0-1'), 7-BB (0-1'), 7-X (0-1'), 7-Y (0-1'), 7-Z (0-1'), DUP-KK, 8-X (0-1'), 8-Y (0-1')	19	11/1-12/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/19/2010; 11/22/2010 (7-11 days)	Unpreserved; received at 2.7 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	**Surrogate %REC for samples 6-II and 7-HH is outside the individual acceptance criteria for DCB (163%/157%).** Surrogate %REC for samples 7-BB and 8-X are below the acceptance criteria for 2,4,5,6-TCMX and DCB (0%) due to dilution.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	The LCS/LCSD RPD for all 19 samples is above the acceptance criteria for Aroclor 1260 (32%).	Samples 6-II, 7-BB, 7-X, and 8-X : one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution. **The dual column RPD for samples 7-Y and 8-Y is above the acceptance criteria for Aroclor 1260; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**Qualify all detected Aroclor results for samples 6-II and 7-HH as estimated ("J").** **Qualify the Aroclor 1260 results for samples 7-Y and 8-Y as "P".**
L1018196	Soil	12-DD (1-2'), 12-EE (1-2'), 12-FF (1-2'), 12-GG (1-2'), 12-HH (1-2'), 12-II (1-2'), 12-JJ (1-2'), 13-GG (1-2'), 13-HH (1-2'), 13-II (1-2'), 13-JJ (1-2'), DUP-RR (1-2'), 13-X (1-2'), 13-AA (1-2'), 13-BB (1-2'), 13-CC (1-2'), 13-DD (1-2'), 13-EE (1-2'). Only samples 12-II, 13-II, and 13-JJ were analyzed; remainder were held	3	11/12/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/28/2010; 1/5/2011 (56-62 days)	Unpreserved; received at 2.8 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for the method blank associated with samples 13-II and 13-JJ are above the acceptance criteria for TCMX (168%) and DCB (169%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Sample 12-II has elevated detection limits due to the dilution.	None
L1018197	Soil	6-R(1-Z'), 6-S (1-2'), 6-V (1-2'), 6-W (1-2'), 6-X (1-Z'), 6-BB (1-2'), 6-DD (1-2'), 6-EE (1-Z'), 6-FF (1-2'), 6-GG (1-2'), 6-HH (1-Z'), DUP-JJ (1-Z'), 6-II (1-Z'), 6-JJ (1-Z'), 7-DD (1-2'), 7-EE (1-Z'), 7-FF (1-Z'), 7-GG (1-2'), 7-HH (1-2'). Only sample 6-X was analyzed	1	11/11/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/30/2010 (49 days)	Unpreserved; received at 2.7 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for sample 6-X are below the acceptance criteria for TCMX and DCB (0%) due to dilution. Surrogate %REC for the method blank are above the acceptance criteria for TCMX (168%) and DCB(169%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Sample 6-X: One or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None
L1018198	Soil	7-II (1-Z'), 7-JJ (1-2'), 6-Y (1-Z'), 7-AA (1-2'), 7-BB (1-Z'), 7-X (1-Z'), 7-Y (1-Z'), 7-Z (1-Z'), DUP-LL, 8-X (1-2'), 8-Y (1-Z'), 8-Z (1-Z'), 8-CC (1-2'), 8-DD (1-Z'), 8-FF (1-Z'), 8-GG 91-Z'), 8-HH (1-Z'), 8-II (1-Z'(, 8-JJ (1-Z'). Only samples 7-BB, 7-X, and 8-X were analyzed; the remainder held	3	11/12/2010	Yes	yes	PCBs as Aroclors by EPA Method 8082/3540C	12/28-29/2010 (56-57 days)	Unpreserved; received at 3.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for sample 8-X are below the acceptance criteria for TCMX and DCB (0%) due to dilution. Surrogate %REC for the method blank are above the acceptance criteria for TCMX (168%) and DCB (169%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 7-X and 8-X: One or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None
L1018201	Soil	9-GG (1-2'), 9-HH (1-2'), 9-JJ (1-2'), 9-BB (1-2'), 9-CC (1-2'), 9-DD (1-2'), 9-EE (1-2'), DUP-NN, 9-X (1-2'), 8-AA (1-2'), 8-BB (1-2'), 10-X (1-2'), 10-Y (1-2'), 10-Z (1-2'), 10-AA (1-2'), 10-BB (1-2'), 10-CC (1-2'), 10-DD (1-2'), 10-EE (1-2'). Only samples 9-HH, 9-X, and 10-Z were analyzed; remainder held	3	11/12/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	12/28/2010; 12/30/2010 (56-58 days)	Unpreserved; received at 2.8 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for samples 9-HH and 10-Z are below the acceptance criteria for TCMX and DCB (0%) due to dilution. Surrogate %REC for the method blank associated with samples 9-HH, 9-X, and 10-Z are above the acceptance criteria for TCMX (168%) and DCB (169%).	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 9-HH and 10-Z : one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	None
L1018256	Soil	31-JJ (0-1'), 32-II (0-1'), 32-JJ (0-1'), 30-JJ (0-1'), 31-II (0-1'), 14-JJ (0-1'), 20-JJ (0-1'), 14-AA (0-1'), 21-JJ (0-1'), DUP-WW	10	11/15/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/22/2010 (7 days)	Unpreserved; received at 3.9 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	TCMX and DCB as surrogates; %REC within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	The LCS/LCSD RPD, associated with sample 14-AA, is above the acceptance criteria for Aroclor 1016 (35%).	None	None
L1018258	Soil	16-II (0-1'), 17-II (0-1'), 17-HH (0-1'), 18-HH (0-1'), 18-II (0-1'), 18-JJ (0-1'), 23-II (0-1'), 22-JJ (0-1'), 22-II (0-1'), 19-II (0-1'), 23-JJ (0-1'), 24-II (0-1'), 24-JJ (0-1'), 25-JJ (0-1'), 26-JJ (0-1'), 27-JJ (0-1'), 28-JJ (0-1'), 29-II (0-1'), 29-JJ (0-1'), DUP-UU	20	11/15/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/22/2010 (7 days)	Unpreserved; received at 3.9 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	TCMX and DCB as surrogates; %REC within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 18-HH, 24-II, 25-JJ, 26-JJ, 27-JJ, 28-JJ, and 29J have elevated detection limits due to dilution.	None
L1018260	Soil	13-JJ (0-1'), 13-LL (0-1'), 13-EE (0-1'), 13-DD (0-1'), 13-X (0-1'), 13-AA (0-1'), 13-BB (0-1'), 14-W (0-1'), 14-X (0-1'), 14-Y (0-1'), 14-Z (0-1'), 20-II (0-1'), 14-GG (0-1'), 19-JJ (0-1'), 15-HH (0-1'), 15-JJ (0-1'), 16-JJ (0-1'), 16-HH (0-1'), 17-JJ (0-1'), DUP-SS	20	11/12/2010; 11/15/2010	Yes	Yes	PCBs as Aroclors by EPA Method 8082/3540C	11/22-23/2010 (7-11 days)	Unpreserved; received at 3.0 C	Analyzed for all Aroclors (1016-1268); no Aroclors detected.	Surrogate %REC for sample 13-JJ are below the acceptance criteria for TCMX and DCB (0%) due to dilution .	**The MSD %REC performed on sample 14-X is outside the acceptance criteria for Aroclor 1260 (39%).**	Analyzed for Aroclor 1016 and 1260. %REC and RPD within acceptance limits.	Samples 13-JJ and 14-Y : one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	**Qualify an Aroclor-1260 detection in sample 14-X as estimated ("J"), or a non-detection as estimated ("UJ").**

TABLE 1
Tier II Data Validation
City Pier - Davol Street
Fall River, Massachusetts

Lab/ID	Medium	Sample IDs	Number of Analyzed Samples	Sample Collection Date	Was MCP Analytical Method Report Certification Form Provided?	Was Presumptive Certainty Upheld (CAM-compliant)?	Analyses	Analysis Date/ Holding Time	Sample Preservation/ Temperature	Method Blanks	Surrogate Samples	Matrix Spike, Matrix Spike Duplicate	Laboratory Control Samples (LCS)	Other	Action
L1017654	Soil	COMP-1, COMP-2, COMP-3	4	11/5/2010	Yes	Yes	SVOCs by EPA Method 8270	11/11/2010 (6 days)	Unpreserved; received at 4.2 °C	No target analyzed detected.	Surrogates: 2-Fluorophenol, phenol-d6, nitytrobenzene-d5, 2-fluorobiphenyl, 2,4,6-tribromophenol, 4-terphenyl-d14. **The surrogate recovery for COMP-1 is outside the individual acceptance criteria for 2-Fluorophenol (27%) [only one surrogate out - no qualification]**	No MS/MSD samples analyzed	**The LCS/LCSD %REC associated with COMP-1, COMP-2, and COMP-3 are below the individual acceptance criteria for 3,3'-Dichlorobenzidine (24%/25%)**	COMP-2 and COMP-3: One or more of the target analytes did not achieve the requested CAM reporting limits.	**In COMP-1, COMP-2, and COMP-3, qualify detections and non-detections of 3,3'-Dichlorobenzidine as estimated ("J" or "UJ").**
							MCP organochlorine pesticides by EPA Method 8081A	11/11/2010 (6 days)	Unpreserved; received at 4.2 °C	All target pesticides analyzed; none detected	TCMX and DCP as surrogates: %REC within acceptance criteria	No MS/MSD samples analyzed	%REC and RPD within acceptance criteria	COMP-2 has elevated detection limits due to dilution . **The dual column RPD for COMP-1 and COMP-3 are above the acceptance criteria for Lindane and 4,4'-DDT; however, obvious column interferences are present. The lower of the two values is reported for this compound. The results have been qualified with a "P".**	**In COMP-1 and COMP-3, qualify results for Lindane and 4,4'-DDT with a "P".**
							MCP chlorinated herbicides by EPA Method 8151A	11/10/10 (5 days)	Unpreserved; received at 4.2 °C	All target herbicides analyzed; none detected	DCAA as surrogate; all %REC within acceptance criteria	No MS/MSD samples analyzed	**The LCS/LCSD %REC associated with COMP-1, COMP-2, and COMP-3 are below the acceptance criteria for Dinoseb (2%/2%); however, the recoveries are due to a noted method interference caused by the hydrolysis step of the extraction procedure.**	None	**In COMP-1, COMP-2, and COMP-3, qualify detections of Dinoseb as estimated ("J") and non-detections as rejected ("R").**
							MCP Total Metals by EPA Methods 6010B/7471A	11/10/2010 (5 days)	Unpreserved; received at 4.2 °C	All target metals analyzed; none detected.	No surrogates analyzed	No MS/MSD samples analyzed	%REC and RPD within acceptance criteria	None	None
							Ignitability by SW846 1030	11/10/2010 (5 days)	Unpreserved; received at 4.2 °C	No method blank analyzed	No surrogates analyzed	No MS/MSD samples analyzed	No LCS/LCSD samples analyzed	None	None
							Reactive cyanide and sulfide by SW846 Chapter 7, Section 7.3	11/6/2010 (1 day)	Unpreserved; received at 4.2 °C	Not detected	No surrogates analyzed	No MS/MSD samples analyzed	LCS; %REC with acceptance criteria	Lab duplicate analysis; RPD not calculated (not detected in sample or duplicate)	None

TABLE 1
Tier II Data Validation
City Pier - Davol Street
Fall River, Massachusetts

Lab/ID	Medium	Sample IDs	Number of Analyzed Samples	Sample Collection Date	Was MCP Analytical Method Report Certification Form Provided?	Was Presumptive Certainty Upheld (CAM-compliant)?	Analyses	Analysis Date/ Holding Time	Sample Preservation/ Temperature	Method Blanks	Surrogate Samples	Matrix Spike, Matrix Spike Duplicate	Laboratory Control Samples (LCS)	Other	Action
L1017866	Soil	COMP-1, COMP-2, COMP-3, COMP-4, COMP-5, COMP-6, COMP-7, COMP-8, COMP-9, Trip-1 (COMP-4 through COMP-8 only for SVOCs herbicides, pesticides, metals, and ignitability)	1/10/1900	11/9/2010	Yes	Yes	VOCs by MCP-8260	11/1-15/2010 (2-6 days)	Preserved with methanol; received at 2°C	Multiple methods blanks; none contain target VOCs.	Surrogates: 1,2-dichloroethane-d4, toluene-d8, 4-bromofluorobenzene, dibromofluoromethane. %REC within acceptance criteria.	No MS/MSD samples analyzed.	**The LCS/LCSD %REC associated with COMP-1, and COMP-3 through COMP-9 are above the acceptance criteria for 1,1-Dichloroethene (136%/136%).** **The LCS/LCSD %REC associated with COMP-1, and COMP-03 through COMP-9 are outside the acceptance criteria for 1,4-Dioxane (LCSD at 133%) and Dichlorodifluoromethane (51%/51%).** **The LCS/LCSD %REC for COMP-2 are below the acceptance criteria for dichlorodifluoromethane (43%/43%)** The LCS/LCSD RPD for COMP-2 is above the acceptance criteria for 1,4-Dioxane (27%); however, the individual LCS/LCSD recoveries are within method limits. **The LCS/LCSD %REC associated with COMP-7 are below the acceptance criteria for Chloromethane (LCSD at 67%) and Dichlorodifluoromethane (43%/39%).**	**COMP-7: The internal standard (IS) response for 1,4-Dichlorobenzene-d4 was below the acceptance criteria; all associated compounds are considered to have a potentially high bias.** **The initial calibration associated with COMP-1 through COMP-9 did not meet the method required minimum response factors for Tetrachloroethene, Bromodichloromethane, 1,1-Dichloroethene, Trichloroethene, 4-Methyl-2-pentanone and 1,4-Dioxane.** The continuing calibration standards associated with COMP-1 through COMP-9 are outside the acceptance criteria for several compounds; however, they are within overall method allowances.	**In COMP-1, and COMP-3 through COMP-9, qualify detections of 1,1-dichloroethene, 1-4-dioxane and dichlorodifluoromethane as estimated ("J") and qualify non-detections of dichlorodifluoro-methane as estimated ("UJ").** **In COMP-2, qualify detections and non-detections of dichlorodifluoromethane as estimated ("J" or "UJ").** **In COMP-7, qualify detections and non-detections of Chloromethane and Dichlorodifluoromethane as estimated ("J" or "UJ").** **In COMP-7, qualify all detected compounds as estimated ("J").** **In COMP-1 through COMP-9, qualify all detections and non-detection of tetrachloroethene, Bromodichloromethane, 1,1-Dichloroethene, Trichloroethene, 4-Methyl-2-pentanone and 1,4-Dioxane as estimated ("J" or "UJ").**
							SVOCs by EPA Method 8270	11/13/2010 (4 days)	Unpreserved; received at 2 °C	No target analyzed detected.	Surrogates: 2-Fluorophenol, phenol-d6, nitrobenzene-d5, 2-fluorobiphenyl, 2,4,6-tribromophenol, 4-terphenyl-d14. %REC within acceptance criteria.	No MS/MSD samples analyzed	**The LCS/LCSD %REC associated with COMP-4 through COMP-8 are below the individual acceptance criteria for 3,3'-Dichlorobenzidine (30%/30%), Aniline (28%/28%) and Acetophenone(35%/32%).**	COMP-4: One or more of the target analytes did not achieve the requested CAM reporting limits due to dilution	**In COMP-4 through COMP-8, qualify detections and non-detections of 3,3'-dichlorobenzidine, aniline, and acetophenone as estimated ("J" or "UJ").**
							MCP chlorinated herbicides by EPA Method 8151A	11/16/10 (7 days)	Unpreserved; received at 2°C	All chlorinated herbicides analyzed; none detected.	DCAA as surrogate; %REC within acceptance criteria.	No MS/MSD samples analyzed	The LCS/LCSD RPDs associated with COMP-4 through COMP-8 are above the acceptance criteria for MCPA (31%), Dalapon (72%), Dichloroprop (35%), 2,4-D (32%), 2,4,5-T (33%) and 2,4,5-TP (37%); however, the individual LCS/LCSD recoveries are within method limits. **The LCS/LCSD %REC associated with COMP-4 through COMP-8, are below the acceptance criteria for Dinoseb (0%/3%); however, the recoveries are due to a noted method interference caused by the hydrolysis step of the extraction procedure. All results are considered to have a potentially low bias. In addition, the associated LCS/LCSD RPD is above the acceptance criteria for Dinoseb (197%).**	COMP-4 through COMP-8 have elevated detection limits due to dilution. **The dual column RPD for COMP-5 is above the acceptance criteria for MCPP; however, no obvious column interferences are present. The higher of the two results is reported and qualified with a "P".**	**In COMP-4 though COMP-8, qualify detections of Dinoseb and estimated ("J") and qualify non-detections as rejected ("R")** **In COMP-5, qualify MCPP with "P".**
							MCP organochlorine pesticides by EPA Method 8081A	11/15/10 (6 days)	Unpreserved; received at 2°C	All target organochlorine pesticides analyzed; none detected.	TCMX and DCP as surrogates: %REC within acceptance criteria, except for COMP-4, where %REC are below the acceptance criteria for TCMX and DCP (all at 0%) due to dilution.	No MS/MSD samples analyzed	All %REC and RPD within acceptance criteria	COMP-4 through COMP-8 have elevated detection limits due to dilution. **The dual column RPDs for COMP-4 are above the acceptance criteria for Lindane and Endosulfan II; however, obvious column interferences are present. The lower of the two values is reported and qualified with a "P".** **The dual column RPDs for COMP-5 and COMP-8 are above the acceptance criteria for Dieldrin and Endosulfan II; however, obvious column interferences are present. The lower of the two values is reported and qualified with a "P".** **The dual column RPD for COMP-6 is above the acceptance criteria for Endosulfan II; however, obvious column interferences are present. The lower of the two values is reported and qualified with a "P".**	**In COMP-4, COMP-5 qualify Lindane and Endosulfan II detections with a "P".** **In COMP-6, qualify Endosulfan II with "P".**

TABLE 1
Tier II Data Validation
City Pier - Davol Street
Fall River, Massachusetts

Lab/ID	Medium	Sample IDs	Number of Analyzed Samples	Sample Collection Date	Was MCP Analytical Method Report Certification Form Provided?	Was Presumptive Certainty Upheld (CAM-compliant)?	Analyses	Analysis Date/ Holding Time	Sample Preservation/ Temperature	Method Blanks	Surrogate Samples	Matrix Spike, Matrix Spike Duplicate	Laboratory Control Samples (LCS)	Other	Action
L1017866 (continued)	Soil	COMP-1, COMP-2, COMP-3, COMP-4, COMP-5, COMP-6, COMP-7, COMP-8, COMP-9, Trip-1 (COMP-4 through COMP-8 only for SVOCs herbicides, pesticides, metals, and ignitability)	1/10/1900	11/9/2010	Yes	Yes	MCP Total Metals by EPA Methods 6010B/7471A	11/13-16/10 (4 - 7 days)	Unpreserved; received at 2 °C	All target metals analyzed; none detected	No surrogates analyzed	No MS/MSD samples analyzed	%REC and RPD within acceptance criteria	None	None
							Ignitability by SW846 1030	11/10/2010 (1 day)	Unpreserved; received at 2 °C	No method blank analyzed	No surrogates analyzed	No MS/MSD samples analyzed	No LCS/LCSD samples analyzed	None	None
							Reactive cyanide and sulfide by SW846 Chapter 7, Section 7.3	11/10/2010 (1 day)	Unpreserved; received at 2 °C	Not detected	No surrogates analyzed	No MS/MSD samples analyzed	LCS; %REC with acceptance criteria	Lab duplicate analysis; RPD not calculated (not detected in sample or duplicate)	None
L1018001	Soil	COMP-1, COMP-2, COMP-3	3	11/5/2010	Yes	Yes	TCLP Lead by EPA 1311	12/2/2010 (27 days)	Samples unpreserved (Received at 4.2 °C	No TCLP lead detected	No surrogates analyzed	MS; %REC within acceptance limits	LCS; %REC within acceptance criteria	Lab duplicate; RPD within acceptance criteria	None
L1018079	Soil	COMP-9, COMP-10, COMP-11, Trip-2	4	11/11/2010	Yes	Yes	VOC by MCP-8260	11/15-16/10 (4-5 days)	Methanol-preserved and water-preserved vials submitted; received at 2 °C	Analyzed for all target VOCs; none detected.	Surrogates: 1,2-dichloroethane-d4, toluene-d8, 4-bromofluorobenzene, dibromofluoromethane. %REC within acceptance criteria.	No MS/MSD samples analyzed	**The LCS/LCSD %REC associated with COMP-10 and COMP-11 are below the acceptance criteria for chloromethane (LCSD at 69%) and dichlorodifluoromethane (46%/42%); however, they have been identified as "difficult" analytes and are within the 40-160% acceptance limits.** **The LCS/LCSD %REC associated with Trip-2 are below the acceptance criteria for dichlorodifluoromethane (49%/46%); however, it has been identified as a "difficult" analyte and is within the 40-160% acceptance limits.**	**COMP-10 and COMP-11: The internal standard (IS) response for 1,4-dichlorobenzene-d4 was below the acceptance criteria; all associated compounds are considered to have a potentially high bias.** **The initial calibration associated with all samples did not meet the method required minimum response factor for carbon tetrachloride and 1,4-dioxane** **The initial calibration associated with COMP-10, COMP-11, and Trip-2 did not meet the method required minimum response factor for tetrachloroethene, bromodichloromethane, 1,1-dichloroethene, trichloroethene, 4-methyl-2-pentanone and 1,4-dioxane.** **The continuing calibration standards associated with all samples are outside the acceptance criteria for several compounds.**	**In COMP-10 and COMP-11, qualify detections and non-detections of chloromethane and dichlorodifluoromethane as estimated ("J" or "UJ").** **In Trip-2, qualify detected and non-detections of dichlorodifluoromethane as estimaetd ("J" or "UJ").** **Estimate all detections in COMP-10 and COMP-11 as estimated ("J").** **In COMP-9, qualify results for carbon tetrachloride and 1,4-Dioxane as estimated ("J")** **In Trip-2, qualify detections of tetrachloroethene, bromodichloromethane, 1,1-dichloroethene, trichloroethene, 4-methyl-2-pentanone and 1,4-dioxane as estimated.**
							MCP organochlorine pesticides by EPA Method 8081A	11/18/2010 (7 days)	Unpreserved; received at 2 °C	All target pesticides analyzed; none detected	Surrogates: TCMX and DCB; %REC meet acceptance criteria	No MS/MSD samples analyzed	The LCS/LCSD RPD associated with COMP-9, COMP-10, and COMP-11 is above the acceptance criteria for 4,4'-DDE (59%); however, the individual LCS/LCSD recoveries are within method limits.	One or more of the target analytes did not achieve the requested CAM reporting limits. **The dual column RPD for COMP-9, COMP-10, and COMP-11 is above the acceptance criteria for Dieldrin and Endosulfan II; however, obvious column interferences are present. The lower of the two values is reported and qualified with a "p".**	**In COMP-9, COMP-10, and COMP-11, qualify detections of dieldrin and Endosulfan II; however, obvious column interferences are present. The lower of the two values is reported and qualified with a "P".**
							MCP chlorinated herbicides by EPA Method 8151A	11/16/2010 (5 days)	Unpreserved; received at 2 °C	All target herbicides analyzed; none detected	DCAA as surrogate (2 columns); %REC within acceptance limits	No MS/MSD samples analyzed	**The LCS/LCSD %REC associated with COMP-9, COMP-10, and COMP-11 are below the acceptance criteria for Dinoseb (0%/3%); however, the recoveries are due to a noted method interference caused by the hydrolysis step of the extraction procedure. The results of the associated samples are reported; however, all results are considered to have a potentially low bias for this compound. The LCS/LCSD RPD is above the acceptance criteria for Dinoseb (197%).** The LCS/LCSD RPDs, associated with COMP-9, COMP-10 and COMP-11 are above the acceptance criteria for MCPA (31%), Dalapon (72%), Dichloroprop (35%), 2,4-D (32%), 2,4,5-T (33%) 2,4,5-TP (Silvex) (37%); however, the individual LCS/LCSD recoveries are within method limits.	None	**In COMP-9, COMP-10, and COMP-11 qualify detections of Dinoseb as estimated ("J") and qualify non-detections as rejected ("R").**
							MCP Total Metals by EPA Methods 6010B/7471A	11/17-18/2010 (6-7 days)	Unpreserved; received at 2 °C	All target metals analyzed; none detected.	No surrogates analyzed	No MS/MSD samples analyzed	All target metals analyzed; %REC and RPD within acceptance range.	None	None
							Ignitability by SW846 Method 1030	11/12/2010 (1 day)	Unpreserved; received at 2 °C	No method blank analyzed	No surrogates analyzed	No MS/MSD samples analyzed	No LCS/LCSD samples analyzed	None	None
							Reactive cyanide and sulfide by SW846 Chapter 7, Section 7.3	11/13/2010 (2 days)	Unpreserved; received at 2 °C	No detections in method blanks	No surrogates analyzed	No MS/MSD samples analyzed	%REC within acceptance criteria	Lab duplicate analysis; RPD not calculated (not detected in sample or duplicate)	None

TABLE 1
Tier II Data Validation
City Pier - Davol Street
Fall River, Massachusetts

Lab/ID	Medium	Sample IDs	Number of Analyzed Samples	Sample Collection Date	Was MCP Analytical Method Report Certification Form Provided?	Was Presumptive Certainty Upheld (CAM-compliant)?	Analyses	Analysis Date/ Holding Time	Sample Preservation/ Temperature	Method Blanks	Surrogate Samples	Matrix Spike, Matrix Spike Duplicate	Laboratory Control Samples (LCS)	Other	Action
L1018217	Soil	COMP-4, COMP-5, COMP-8	3	11/9/2010	Yes	Yes	TCLP Lead by EPA 1311	11/20/2010 (11 days)	Unpreserved: Received at 2 °C	No TCLP lead detected	No surrogate samples analyzed	MS samples; %REC within acceptance criteria	LCS samples; %REC within acceptance criteria	Lab duplicate sample; RPD within acceptance criteria. TCLP pesticides requested on chain of custody; not analyzed for.	None
L1018886	Soil	COMP-9, COMP-10, COMP-11	3	11/11/2010	Yes	Yes	Semivolatile Organic Compounds by MCP-8270	Extraction: 11/24/10 (13 days); analysis: 11/27/10 (16 days)	Unpreserved; received at 2.0 C	Analyzed for all target SVOCs; none detected	Surrogates: 2-fluorophenol, phenol-d6, nitrobenzene-d5, 2-fluorobiphenyl, 2,4,6-tribromophenol, 4-terphenyl-d14; all %REC within acceptance criteria	No MS/MSD samples analyzed	**LCS/LCSD %REC associated with COMP-9, COMP-10, and COMP-11 are below the individual acceptance criteria for 3,3'-dichlorobenzidine (35%/28%), aniline (22%/15%) and 4-chloroaniline(28%/20%).** LCS/LCSD RPDs are above the acceptance criteria for aniline (38%) and 4-chloroaniline (33%).	Samples COMP-9, COMP-10, COMP-11: one or more of the target analytes did not achieve the requested CAM reporting limits due to dilution.	**In COMP-9, COMP-10, and COMP-11, qualify detections of 3,3-dichlorobenzidine, aniline, and chloroaniline as estimated ("J"), and qualify non-detections as estimated ("UJ").**

Appendix C
Risk-Based Cleanup Risk Narrative by Wilcox and Barton

Wilcox & Barton INC.
ENVIRONMENTAL AND ENGINEERING SERVICES

RISK-BASED CLEANUP RISK NARRATIVE

CITY PIER - DAVOL STREET
FALL RIVER, MASSACHUSETTS
MassDEP RTN 4-17012

Prepared for:
BETA Group, Inc.
6 Blackstone Valley Place,
Lincoln, Rhode Island 02865
Contact: Joseph McLoughlin, LSP, (401) 333-2382

Prepared by:
Wilcox & Barton, Inc.
1115 Route 100B, Suite 200
Moretown, Vermont 05660
Contact: Cynthia Fuller, (401) 323-9571
June 22, 2011

Wilcox & Barton, Inc. Project No.: BETA0009

RISK-BASED CLEANUP RISK NARRATIVE

CITY PIER - DAVOL STREET
FALL RIVER, MASSACHUSETTS
MassDEP RTN 4-17012

Prepared for:
BETA Group, Inc.
6 Blackstone Valley Place,
Lincoln, Rhode Island 02865
Contact: Joseph McLoughlin, LSP, (401) 333-2382

Prepared by:
Wilcox & Barton, Inc.
1115 Route 100B, Suite 200
Moretown, Vermont 05660
Contact: Cynthia Fuller, (401) 323-9571
June 22, 2011

Wilcox & Barton, Inc. Project No.: BETA0009

CERTIFICATION

The following personnel have prepared and/or reviewed this report for accuracy, content, and quality of presentation.

Document Name: Risk-Based Cleanup Risk Narrative
City Pier - Davol Street
Fall River, Massachusetts
MassDEP RTN 4-17012

Date/Version: June 22, 2011

Cynthia Fuller
Health Risk Assessor

TABLE OF CONTENTS

Figure

1.0 INTRODUCTION

This document presents a discussion on the effect of the planned development of City Pier upon the potential for exposure to chemical constituents detected in site soil. Specifically, the exposure management barriers and activity and use limitations (AULs) proposed as part of the Risk-Based Cleanup pursuant to 40 CFR §761.61(c) are discussed in terms of how they will prevent exposure to chemical constituents in soil, resulting in No Significant Risk to human health, safety, public welfare or the environment.

2.0 BACKGROUND

The City Pier site consists of 4.22 acres, and is bordered on the west by the Taunton River and Davol Street on the east. Granite bulkhead walls, rip-rap, and crushed stone border the river and the bulkheads extend to the west to form two piers. Materials on the surface of the site include grass, gravel, and brush, and a sidewalk that runs through the site. The surrounding area consists of multi-family housing, commercial properties, and condominium development areas. A condominium complex (Point Gloria) is located just north of the Site, and the Braga Bridge is located just south of the site. The site is not currently in use, and access to much of the site is restricted by a 6-foot high chain link fence with locked gates along the southwest portion of the site.

According to historical Sanborn maps, the site was used as a lumber yard with milling operations between 1888 and 1976, and for boat storage and as a marina after 1976. The Fall River Redevelopment Authority (FRRA) acquired the property in 1982, and third parties continue to use the site for occasional boat storage, repairs, river access, and the storage of construction equipment until September 2005. The Site is currently vacant.

Results of analytical testing performed during site investigations identified the presence of polychlorinated biphenyls (PCB) in site soil at concentrations greater than or equal to 50 parts per million (≥50 ppm or mg/kg) at depths between 0 and 8 feet below ground surface. Based on this information, PCB-impacted soil at the site meets the definition of *PCB remediation waste* as defined under the federal PCB regulations at 40 CFR 761.3. The contamination is believed to have originated from impacted fill material that was placed onsite during the initial development of the property. The original source of the filled material is not documented and is unknown.

To comply with the Toxic Substances Control Act (TSCA), the FRRA conducted a supplemental soil assessment to evaluate the extent of PCB contamination in soil. A Work Plan was prepared under the Risk-Based Cleanup provisions of 40 CFR 761.61 to describe the assessment, segregation, capping, and off-site disposal of PCB-impacted soil at the City Pier site. The results of the site investigation are currently being compiled.

3.0 FUTURE SITE DEVELOPMENT AND USE

3.1 Proposed Physical Uses and Contaminant Removal

After site investigations are complete, a developer will be contracted by FFRA to construct a mixed use development at the City Pier site. The proposed development consists of a marina, a boat storage/repair facility, a store, and public access to the waterfront via a river walk. A draft Conceptual Site Development Plan is included (**Figure 1**) that shows the proposed layout of the marina, including locations of utility lines, office building, and fueling station.

Prior to the beginning of general construction, clean corridors will be constructed on the site to house water, sewer, and storm drain lines that are planned to be located in areas currently occupied by contaminated soil. The clean corridors will consist of trenches excavated to a sufficient depth and width, lined with geotextile fabric, and backfilled with clean imported sand and gravel. Utilities can be installed at the time of the clean corridor construction, or excavated into the clean corridors at a later time. Contaminated soil removed as part of clean corridor construction will either be relocated on site, or managed off of the site at an appropriate disposal facility as follows:

Reuse on-Site

- Soil containing PCB concentrations below 100 ppm will be retained on site and relocated beneath an engineered barrier, as subsequently described.

Off-Site Disposal

- Soil containing PCB concentrations above 10 ppm but below 50 ppm will be managed either on-site as described above or off-site at a special waste landfill (Turnkey Landfill, NH);
- Soil containing PCB concentrations above 50 ppm will be managed either on-site as described above or off-site at a TSCA Landfill (Model City, NY)

At completion of the clean corridor construction and other site remedial activities, soil containing PCBs at a concentration above 1 ppm [the cleanup level for bulk PCB remediation waste in high occupancy areas per 40 CFR § 761.61 (a)(4)(i)(A)] will either be removed from the site and properly disposed or will be covered on site with exposure management barriers (engineered controls), and managed through the use of an AUL to ensure that the barriers remain intact.

3.2 Proposed Exposure Management Barriers

The following exposure management barriers will be implemented during or subsequent to construction activities:

Engineered Barrier – Landscaped Areas

Unpaved landscaped areas that will be located over PCB-contaminated soil will be constructed as part of an engineered barrier that will consist of the following:

- A continuous layer of geotextile fabric placed directly over the contaminated soil;
- A 12- inch +/- layer of granular material placed over the separation geotextile;
- A "warning" barrier;
- A 2-foot layer of granular material placed over the warning barrier; and
- Landscaping over the granular material.

Engineered Barrier – Paved Areas

Paved surfaces that will be located over PCB-contaminated soil will be constructed as part of an engineered barrier that will consist of:

- A continuous layer of geotextile fabric placed directly over the contaminated soil;
- A 2-foot layer of imported sand and gravel containing an orange mesh warning barrier; and
- A minimum of 6 inches of binder and wearing course of pavement.

3.3 Proposed Activity and Use Limitation

In conjunction with the use of exposure management barriers, an AUL will be implemented in capped areas of the site. The draft AUL terms were presented in the *Risk-Based TSCA Work Plan* (BETA Group, Inc. October 2010) and are briefly summarized (and abbreviated) below:

Activities and Uses Consistent with the AUL Opinion

A condition of No Significant Risk to health, safety, public welfare or the environment exists for any foreseeable period of time so long as any of the following activities and uses occur on the Portion of the Property subject to the AUL:

- Use for a marina facility, including offices, pedestrian and/or vehicle traffic, vehicle parking, vehicle maintenance, equipment storage and maintenance;
- Ongoing use of all existing facilities and associated landscaping, parking lots, and sidewalks;
- Occupancy by employees and visitors for all typical and routine marina-related activities;
- Maintenance of landscaped areas and lawns, including filling of burrowing animal holes and placement, maintenance and/or removal of mulch or other surface enhancement or erosion control materials within the top two feet of the permeable soil cap;
- Interior or exterior building maintenance that does not impact the soil cap and/or the underlying soil;
- Planting or removal within the landscaped areas of ornamental vegetation such as grass, shallow-rooted shrubs, flowers, groundcover, etc. No excavation for planting or removal of vegetation in the landscaped areas shall extend beyond the orange warning barrier placed at approximately two feet below grade, except as specifically provided for herein;

- Maintenance, including replacement, of exterior surface materials such as asphalt paving, concrete paving, or sidewalks, such that removal of such surfaces is limited to the material to be replaced and the underlying soil is not significantly disturbed (one foot less below the bottom of the surface being removed) and where the surface material is repaired or replaced with a comparable barrier;
- Installation of concrete or asphalt pavement over currently landscaped areas, including subgrade materials, with installed depth limited to less than two feet below existing grade;
- Erection or placement of temporary structures that do not require soil excavation. Where stakes are required to stabilize a temporary structure, such stakes shall not be driven more than two feet into the ground;
- Any other public, commercial, or industrial activities and uses that do not cause and/or result in the direct contact with, disturbance of, and/or relocation of the contaminated soil, the top of which is currently located at an approximate depth of three feet below surface grade; and
- Such other activities or uses which, in the Opinion of an LSP[1], shall present no greater risk of harm to health, safety, public welfare or the environment than the activities and uses set forth [in this Paragraph].

Activities and Uses Inconsistent with the AUL Opinion

Activities and uses that are inconsistent with the AUL, and which, if implemented at the Portion of the Property subject to the AUL, may result in a significant risk of harm to health, safety, public welfare or the environment or in a substantial hazard, are as follows:

- Activities that result, or could result, in compromising the structural integrity of asphalt pavement or concrete bounds that delineate the limits of the AUL area;
- Activities that result, or could result, in the erosion of soil in any unpaved areas;
- Removal of any soil from landscaped areas without immediate replacement with clean soil, or other suitable impermeable or permeable cap material, to maintain existing grade;
- Planting of food crops for human or animal consumption;
- Excavation to a depth greater than two feet in paved and landscaped areas, or penetration of the warning barrier, whichever is encountered first, without prior development of a Soil Management Plan and a Health and Safety Plan under the supervision of an LSP; and
- Any other public, commercial, or industrial activities or uses that result in the direct contact with, disturbance of, and/or relocation of the contaminated soil, the top of which is currently located at a depth of approximately three feet below surface grade.

Obligations and Conditions Set Forth in the AUL Opinion

Obligations and/or conditions to be undertaken and/or maintained at the Portion of the Property to maintain a condition of No Significant Risk as set forth in the AUL Opinion shall include the following:

[1] Massachusetts Licensed Site Professional

- Maintain all asphalt pavement, concrete pavement, and sidewalks such that the integrity of all impervious surfaces is not compromised;
- Maintain all landscaped areas such that soil erosion is prevented;
- Perform annual inspections and associated record-keeping activities to confirm that the pavement, foundation, and landscaping are being properly maintained;
- A Soil Management Plan must be prepared by an LSP and implemented prior to the commencement of any activity that is likely to disturb contaminated soil, the top of which is located approximately three feet below surface grade. The Soil Management Plan should describe appropriate soil excavation, handling, storage, transport, and disposal procedures and include a description of the engineering controls and air monitoring procedures necessary to adequately protect workers and potential receptors in the vicinity from fugitive dust and airborne particulates;
- A Health and Safety Plan must be prepared by a certified Industrial Hygienist, LSP, or other qualified individual sufficiently trained in worker health and safety requirements and implemented prior to the commencement of any activity that is likely to disturb contaminated soil located below the soil cap. The Health and Safety Plan must specify necessary personal protection (i.e., clothing, respirators), engineering controls, and environmental monitoring necessary to prevent worker exposures to contaminated soil through dermal contact, ingestion, and/or inhalation; and
- The contaminated soil, currently located approximately three feet below surface grade, must remain at depth and may not be relocated, unless such activity is first appropriately evaluated by an LSP who renders an Opinion that performance of such relocation is consistent with maintaining a condition of No Significant Risk.

4.0 HUMAN EXPOSURE ASSESSMENT

4.1 Fate and Transport Properties of PCBs

The following table lists values for PCBs for common fate and transport parameters:

Parameter	Value [1]	Implication
Henry's Law Constant (H)	0.011 cm^3/cm^3	Indicates low volatility from water
Log octanol/water partition coefficient (K_{ow})	6.5 cm^3/g	Indicates strong affinity for lipids
Organic carbon/water partition coefficient (K_{oc})	2.45 x 10^6 cm^3/g	Indicates strong binding to organic carbon
Vapor Pressure (VP)	1 x 10^{-7} atm	Indicates low volatility
Water Solubility (S)	0.043 mg/L	Indicates low water solubility

1. US EPA (2005) Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities; Companion database. EPA530-R-05-006.

In the terrestrial environment, PCBs are most likely to be found strongly bound to soil or sediment matrices, with lesser amounts found in water or air matrices. Previous sampling results of site groundwater from 12 site groundwater monitoring wells detected PCBs in monitoring

well MW-5 on two occasions only (June 18, 2004, and September 21, 2004) at concentrations below the current GW-3 standard of 10 parts per billion (ppb). Therefore, groundwater contamination is not considered an issue for the site. While PCBs can volatilize to a small degree, air concentrations of volatilized PCBs are rarely of concern. PCBs degrade very slowly under environmental conditions and are considered to be persistent. Based on these factors, the primary environmental medium impacted at the site is soil.

4.2 Potential Exposure Assessment - Uncontrolled Site Conditions

The proposed developed site will include a marina, a boat storage/repair facility, a store, and public access to the waterfront via a river walk. The following table identifies human receptor groups that will potentially be present at the site after development and the exposure pathways by which, *in the absence of exposure controls*, they could be exposed to soil at the site:

Exposure Pathway	Pedestrians/Visitors	On-Site Workers	Construction/Utility Workers
Soil Ingestion	✓	✓	✓
Soil Dermal Contact	✓	✓	✓
Inhalation of Entrained Soil Particles	✓	✓	✓
Ingestion of Inhaled, Entrained Soil Particles			✓

Under the planned development, use of site groundwater is not expected and site groundwater is not categorized for consumptive purposes. In addition, impacted groundwater has not been identified at the site. Therefore, exposure to groundwater is incomplete.

Because PCBs have a low volatility, exposure to PCB vapors through inhalation is not anticipated to be an important or complete exposure pathway.

4.3 Effect of Proposed Exposure Management Barriers

The exposure management barriers and AUL conditions proposed as part of the Risk-Based Cleanup approach will affect the above exposure pathways as follows:

4.3.1 Landscaped Areas

The exposure management barrier in landscaped areas will consist of a separation layer of geotextile fabric placed directly over the contaminated soil, overlain by a 12-inch barrier of granular material, overlain by a warning barrier, overlain by a 2-foot thick layer of granular material, and placement of landscaping over the granular material. This will result in a 3-foot thick minimum cover over the contaminated soil. This cover, when managed under the requirements of the AUL, will prevent on-site workers and users of the City Pier facility from having direct contact with contaminated soil. This eliminates exposure through soil ingestion, soil dermal contact, and inhalation/ingestion of entrained soil particles.

The conditions of the AUL prevent disturbance of the contaminated soil without the preparation of a Soil Management Plan and Health and Safety Plan, overseen by an LSP. Therefore,

construction and/or utility workers who might normally disturb soil as part of work activities will be prevented from contacting contaminated soil without the appropriate type and level of protection. Therefore, any exposure that might occur will be mitigated by worker protection equipment and, significant health risks are prevented.

4.3.2 Paved Surfaces

The exposure management barrier in paved areas will consist of continuous "separation" layer of geotextile fabric placed directly over the contaminated soil; overlain by a 2-foot thick layer of imported sand and gravel containing an orange mesh warning barrier, overlain by a minimum of six inches of a binder (base) and wearing (surface) course of pavement. This will result in a 2.5-foot thick minimum paved surface over contaminated soil. This surface, when managed under the requirements of the AUL, will prevent on-site workers and users of the City Pier facility from having direct contact with contaminated soil. This eliminates exposure through soil ingestion, soil dermal contact, and inhalation/ingestion of entrained soil particles.

The conditions of the AUL prevent disturbance of pavement without subsequent restoration of the pavement to a protective condition. In addition, construction and/or utility workers are prohibited from disturbing the underlying contaminated soil without the preparation of a Soil Management Plan and Health and Safety Plan, overseen by an LSP. Therefore, contact with contaminated soil will be prevented without the appropriate type and level of worker protection equipment, preventing the occurrence of significant health risks.

5.0 ENVIRONMENTAL EXPOSURE ASSESSMENT

5.1 Terrestrial Environmental Receptors

The exposure management barriers and AUL conditions to be implemented as part of the Risk-Based Cleanup will be equally protective for terrestrial environmental receptors, such as birds and small mammals, that may dwell in the area. While burrowing animals may dig into unpaved areas, the underlying granular material and geotextile fabric will prevent these animals from contacting contaminated soil. In addition, regular maintenance of unpaved areas will fill and close up burrow holes made by animals, deterring animals from residing on the site. The marina activities are likely to also limit the extent to which the site is used as an environmental habitat.

5.2 Aquatic Environmental Receptors

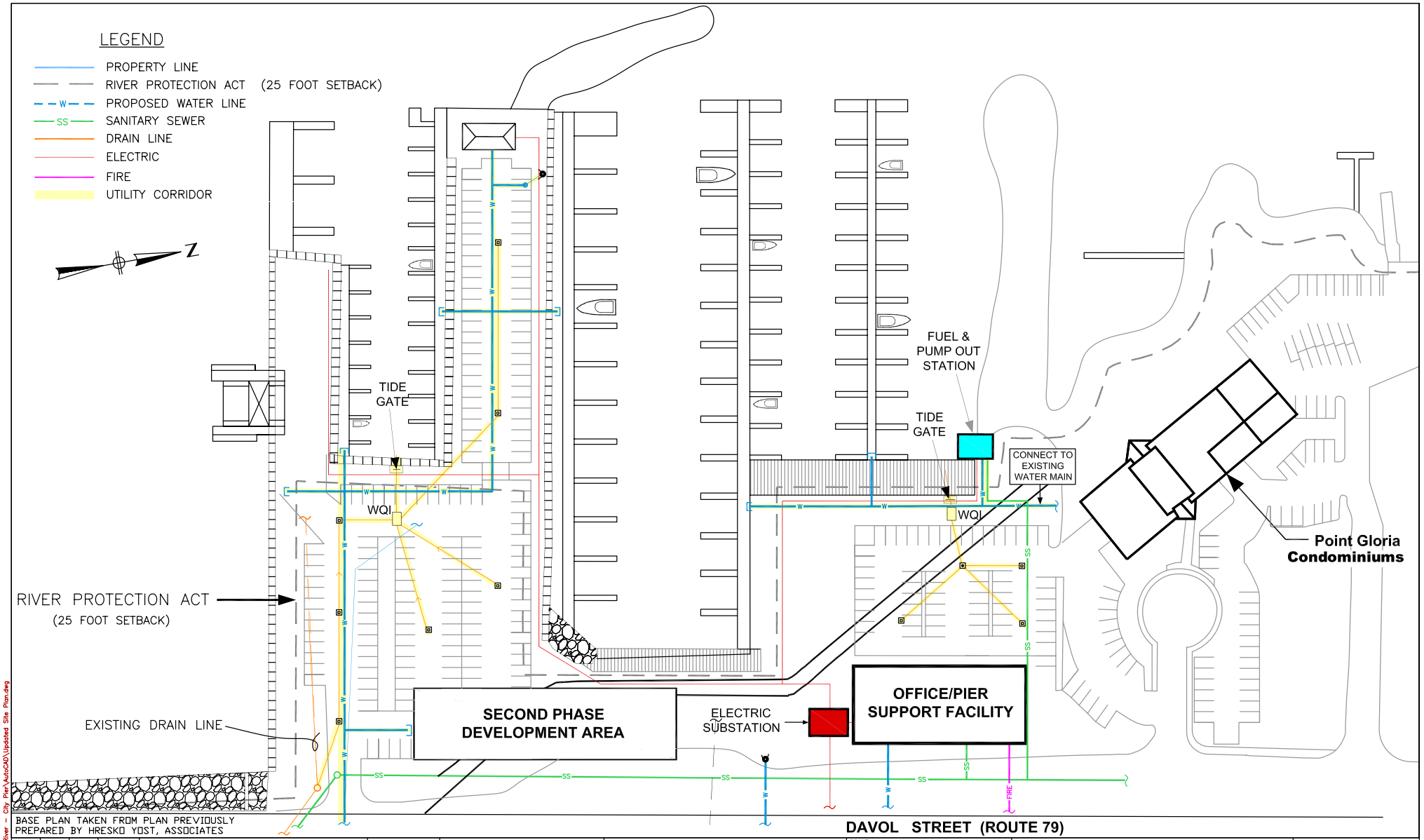
Previous sampling results of site groundwater from 12 groundwater monitoring wells detected PCBs in one monitoring well (MW-5) on two occasions only (June 18, 2004, and September 21, 2004). Both detected concentrations were below the current Massachusetts Contingency Plan (MCP) Method 1 GW-3 groundwater standard, protective of surface water resources, of 10 ppb. Therefore, groundwater contamination is not considered an issue for the site. Because of the strong binding of PCBs to soil and low concentration in groundwater, substantial discharge of PCBs in groundwater to the Taunton River is not likely to occur.
A previous document prepared for the site, *Phase II Comprehensive Site Assessment and Phase III Remedial Action Plan* (ESS, January 19, 2006), documented sediment data collected

from locations upstream and downstream of the site in the Taunton River. According to the obtained data, both upstream and downstream sediment samples have exceedances of the Massachusetts Department of Environmental Protection (MassDEP) sediment screening values for lead and PCBs. Since PCBs and lead have been identified in the Taunton River both upstream and downstream of the site, the presence of lead and PCBs in sediments adjacent to the site is considered a "local condition" and not representative of site impacts.

6.0 CONCLUSION

A Risk-Based Cleanup pursuant to the provisions of 40 CFR 761.61 is being implemented at the site. This cleanup strategy will result in the removal of soil with PCB concentrations in excess of 100 ppm, placement of exposure management barriers over soil retained on site to prevent future users of the site from having direct contact with soil, construction of clean utility corridors to prevent exposure of utility workers to soil while conducting utility repairs, and implementation of activity and use limitations to ensure maintenance of the exposure barriers and prohibit the occurrence of certain activities without appropriate oversight and worker protection. Once implemented, this Risk-Based Cleanup strategy will ensure that the site poses No Significant Risk to human health, safety, public welfare or the environment.

FIGURE



NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

REVISIONS

DESIGNED BY:

CHECKED BY:

B E T A Group, Inc.
Engineers · Scientists · Planners
315 Norwood Park South
Norwood, MA 02062
781.255.1982
email: BETA@BETA-inc.com

City Pier
Davol Street
Fall River, Massachusetts

SCALE: 1 inch = 80 ft.

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

FIGURE 1
Conceptual Site Development Plan

JOB 3719
PLOT DATE: May. 05, 2010
ISSUE DATE
SHEET

O:\3700s\3719 - Fall River - City Pier\AutoCAD\Updated Site Plan.dwg

Appendix D
Seawall Inspection and Evaluation Report

Seawall Inspection and Evaluation

CITY PIER – DAVOL STREET
Fall River, MA

October 2010

Prepared for:

Fall River Redevelopment Authority
One Government Center
Fall River, Massachusetts

Prepared by:

BETA Group, Inc.
Engineers • Planners • Landscape Architects • Scientists
315 Norwood Park South, Norwood, MA 02062
Lincoln, RI & Rocky Hill, CT
email: BETA@BETA-inc.com

TABLE OF CONTENTS

1.0 INTRODUCTION

BETA Group, Inc. (BETA) has prepared this Seawall Inspection and Evaluation Report for the City of Fall River Redevelopment Authority for the City Pier property on Davol Street in Fall River, Massachusetts. This report documents the inspection of the stone block seawalls that form the perimeter of the property by BETA and Childs Engineering Corporation (Childs) on August 9, 2010. This report includes recommendations for additional investigation and seawall repairs as well as budgetary cost estimates for the repairs.

The topside portions of the seawalls were inspected by BETA while the underwater portions were inspected by a three-man dive team by Childs. A copy of the underwater inspection report prepared by Childs is contained in Appendix A. As the property contains different segments of seawall, each has been labeled as shown in Figure No. 1 below.

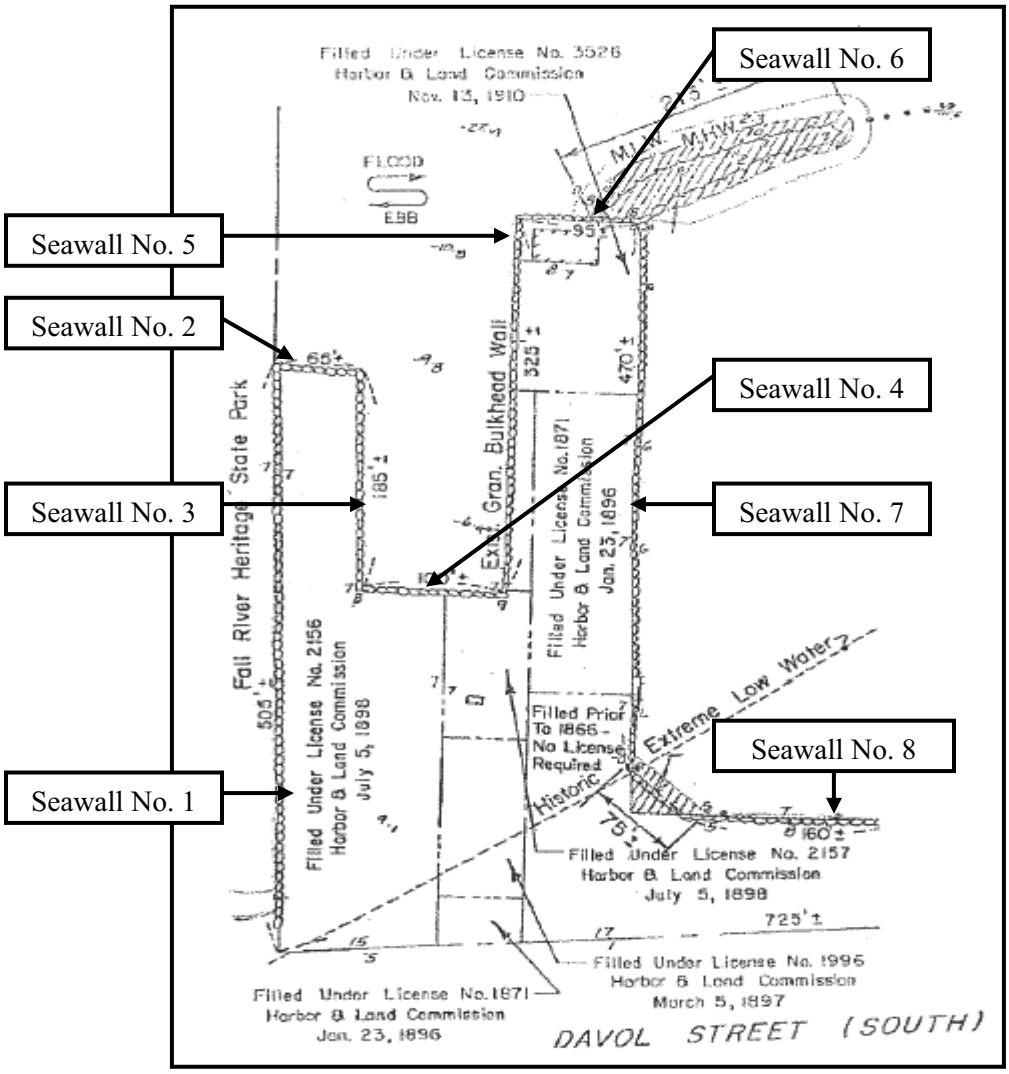


Figure No. 1
Plan taken from DEP License No. 995, dated October 25, 1983
prepared by Tibbetts Engineering Corp. New Bedford MA

In order to provide a general location of the noted deficiencies and observations, an approximate baseline was stationed along the top of the seawalls. Station 0+00 commences at the eastern most corner of Seawall No. 1 and runs continuously around the perimeter of the pier ending at the easterly end of Seawall No. 7. Seawall No. 8 was independently stationed. Figure No. 2 below provides the general stationing of each seawall.

Seawall No.	Starting Station	Ending Station	Approx. Length (ft)
1	00+00	04-82	482
2	04+82	05+36	54
3	05+36	07+20	184
4	07+20	08+20	100
5	08+20	11+00	280
6	11+00	12+44	144
7	12+44	17+30	486
8	0+00	01+40	140

Figure No. 2

2.0 SEAWALL INSPECTION

The following describes BETA and Childs observations of each of the eight seawalls. These visual observations include the topside and the vertical exposed face of the seawalls both above and below the water line. No excavations were performed to determine the depth of the seawalls below the mudline or to verify the shape or extent of the seawalls.

SEAWALL NO. 1

Photograph 1

Seawall No. 1 is 482 feet long and runs east to west. Exposed wall heights vary between 0.0 feet at the east end to 14 feet at the west end. At Station 04+80 the slope of the mudline is approximately 2:1 away from the toe of the seawall. The above-water portion of the stone seawall is in poor condition. Several large voids were generally noted between the stones vertical joints. These voids varied in size but were measured up to 8" wide and extended down to the mud line. Subsequently, approximately 150' of severe embankment erosion can be found on the pier side of the seawall. Random stone blocks were also found to be missing. Erosion of the retained embankment was also present at Station 04+82 where the seawall turns 90° in the north direction (See Photograph 1). Complete deterioration of the seawall at this location, including missing stone blocks, has resulted in a loss of up to two feet of backfill immediately inshore of the wall (see Appendix A Photographs 1 and 2). Specific

underwater anomalies include five large voids in the seawall at Stations 01+60, 01+90, 02+35, 03+20 to 03+32, and 03+50.

SEAWALL NO. 2

Seawall No. 2 is 54 feet long and runs south to north. Exposed wall heights vary between 14 feet at the south end to 12 feet at the north end. The above-water portion of the stone seawall is in poor condition. Erosion of the retained embankment is present for the entire length of seawall. Complete deterioration of the seawall, including missing stone blocks, has resulted in loss of up to two feet of backfill immediately inshore of the wall (see Appendix A Photograph 3). One large void at Station 05+28 at the mudline was found underwater.

In addition, a 7-foot wide by 6-foot high culvert was observed at the mudline at Station 5+05. The length or the purpose of the culvert was not apparent at the time of inspection. Subsequent information obtained from a review of historical Chapter 91 files from the DEP revealed that the culvert is a sewer outfall extending through the site. No further information was found regarding the culverts construction, layout, or point of origin. There is a concern that the sewer outfall may still be in active use and it may be a migration pathway for PCB impacted soil. In addition, a sinkhole noted during prior pier inspections, which was filled in 2009, may have been the result of a failure of the top of the culvert passing beneath the site.

SEAWALL NO. 3

Seawall No. 3 is 184 feet long and runs west to east. Exposed wall heights vary between 12 feet at the west end to 9.5 feet at the east end. The above-water portion of the stone seawall is in good condition. Minor random pockets of erosion were noted directly behind the seawall but were localized. Two top course blocks were offset roughly 1' into the Taunton River but appeared to be stable. The block alignment may be related to the original construction, as all underlying stones appeared to be in-line. Specific underwater anomalies include one large void at Station 06+52, and seawall construction using smaller stones than typical at Station 05+92

SEAWALL NO. 4

Seawall No. 4 is 100 feet long and runs south to north. Exposed wall heights vary between 9.5 feet at the south end to 10 feet at the north end. The above-water portion of the stone seawall is in fair condition. Six-inch stone riprap has been placed directly behind the seawall for approximately half its length to help reduce erosion of contaminated soil. One other deficiency noted was the absence of a second course of stone

Photograph 2

block. The missing block has created a 5'± square void at the water line (See Photograph 2). Specific underwater anomalies include a large void and displaced stones at Station 07+80, and a large void at the mudline between Station 07+95 and 08+02, with stones observed on the mudline immediately next to the void (see Appendix A Photograph 4).

SEAWALL NO. 5

Seawall No. 5 is 330 feet long and runs east to west. Exposed wall heights vary between 10 feet at the east end to 17.5 feet at the west end. The slope of the mudline is approximately 2:1 away from the toe of the seawall. The above-water portion of the stone seawall is in poor condition. A large percentage of this seawall shows signs of advanced deterioration and/or past repairs. Seawall deficiencies noted include misplaced stone blocks, missing stone blocks, large voids, and localized settlement. Stone riprap has been placed directly behind the entire length of seawall (See Photograph 3). The stone riprap indicates a recent repair measure to help control erosion. Where the seawall jogs 90° in the north direction, a concrete platform has been poured directly over the top course and extends approximately 20' back over the earth embankment. The platform is in good condition with only hairline cracking present. Specific underwater anomalies include six large voids in the seawall including two at Station 09+10, and one at Stations 09+30, 10+15, 10+85, and 11 +50; evidence of wall rotation between Station 10+30 and 10+95; and wall construction using irregular stones between Station 08+90 and 09+10.

Photograph 3

SEAWALL NO. 6

Seawall No. 6 is 60 feet long and runs south to north. Exposed wall heights vary between 17.5 feet at the south end to 0.0 feet at the north end where the breakwater begins. The above-water portion of the stone seawall is in good condition. A concrete platform has been poured directly over the top course and extends approximately 20' back over the earth embankment. The visibility of the upper stone courses was limited due to the presence of this platform. Visibility of the top surface of the platforms was limited due to debris but did appear to be in good condition with some hairline cracking present. The west face of the platform exhibits moderate scaling of the concrete (See Photograph 4). Steel beams protruding from a concrete cap were also observed along the full length of Seawall No. 6.

Photograph 4

The stone block seawall terminates at an earth embankment acting as a quasi breakwater. The breakwater extends into the Taunton River and is protected by large stone riprap. Inspection of the breakwater or slope protection was not performed. Specific underwater anomalies consist of a large void in the seawall at Station 11 +75.

SEAWALL NO. 7

Seawall No. 7 is 456 feet long and runs west to east. Exposed wall heights vary between 13.5 feet to 0.0 feet at the east end where dumped stone riprap is located. The above-water portion of the stone seawall is in poor condition. Several small areas of embankment repair were found in the form of asphaltic patching and stone riprap. At the embankment repair locations, deteriorated seawall sections were found. Seawall deterioration ranged from missing top course blocks, misplaced blocks, large voids, and attempted repair measures. An 80'± section of seawall was found to be unstable adjacent to one of the embankment repairs. The stone seawall at this location is sloping towards the river and may likely be a result of seawall instability below the water surface (See Photograph 5). Specific underwater anomalies include three large voids in the seawall at Stations 13+85, 14+50, and 15+00.

Photograph 5

SEAWALL NO. 8

Seawall No. 8 is 140 feet long and runs south to north. Exposed wall heights vary between 0.0 feet at both ends to 10.5 feet at the halfway point. The seawall has a new concrete cap and handrail, and the backlands is accessible to the public. The slope of the mudline is approximately 2:1. Specific anomalies include a large void in the seawall at Station 0+95, and a bulge in the seawall between Station 0+90 and 01+20 (see Appendix A Photographs 7 and 8).

Please note that all of the observed voids in the seawall are depicted on the Site Plan and Existing Conditions Plan, Sheet No. X-101, contained in Appendix A.

3.0 SEAWALL EVALUATION

3.1 NOTED SEAWALL FAILURES

From the topside and underwater inspections, four types of seawall failures were observed: 1) voids in the seawall; 2) displaced stone blocks; 3) rotation/bulging of the seawall; and 4) sinkholes. Voids in the seawall and displaced stone blocks are typically localized conditions whereas rotation/bulging of the seawall are signs of a more general foundation failure.

1. Voids are the result of individual blocks falling out of the seawall face. As noted earlier, the blocks are not perfectly square and gaps up to 12-inch horizontal and vertical between stones are present. If chink stones fall out, or any wall movement occurs over time, these gaps often cause individual stone blocks to become dislodged.

2. Displaced blocks are observed along the top of the southern Seawall No. 1 and western Seawall No. 2. These seawalls are exposed to wave action from the southwest. Backfill is lost when these walls are overtopped and individual blocks are displaced by wave forces.

3. Rotation/bulging of the seawall may represent the original constructed condition or a foundation failure. The rotation observed along Seawall No. 7 may have been caused by a barge that was reportedly berthed there in the past. The barge may have imposed horizontal loads on the wall that it was not designed to resist. Surcharge loads from the former lumber yard or from boat storage may have also contributed the rotation/bulging of the wall.

4. Sinkholes form when wave action or normal tide cycles cause fill behind the seawall to migrate through gaps between individual blocks or through voids in the seawall.

3.2 EXISTING SEAWALL ANALYSIS

Limited information is available showing the general construction and geometry of the seawalls. Historical Chapter 91 files obtained from the DEP (License No. 2156 dated June 1898) provide a general cross section of Seawall No. 1, 2, 3, and a portion of the length of Seawall No. 4. In addition, License No. 3526 dated November 30, 1910 provides a general cross section of Seawall No. 6 and a portion of the length of Seawall No. 5 and 7.

Utilizing this information, an analysis was performed to determine the overall stability of existing seawalls and to gauge the approximate bearing pressure on the soil below the toe of the seawalls. The calculations contained in Appendix B, show that the general overturning and sliding stability of the seawalls appear to be adequate. However, the existing bearing pressure under the toe (front face) of the seawall appears to be higher

than one would expect for the location, age and type of construction. Such a high bearing pressure could be a contributing factor to the rotation and bulging failures of the seawall noted above.

As part of the redevelopment of this site, it is anticipated that additional fill will be added to raise the overall elevation of the site by up to two to three feet. This additional fill, coupled with the proposed use of the site as a parking area will increase the loading on the seawalls. A preliminary review of this additional loading reveals that the existing seawalls would be inadequate to properly support the additional loading. This coupled with the noted existing rotational and bulging failures of some sections of the existing seawall suggests additional measures should be undertaken. These measures include verifying the geometry of the seawalls; obtaining subsurface soil information; and reviewing site development options that would limit the additional loading on the seawalls.

4.0 RECOMMENDATIONS

Based on the inspections by BETA and Childs and the calculations discussed above, BETA makes the following recommendations for additional site exploration and suggested seawall repairs. Please note that the implementation of these recommendations may depend on the redevelopment plans and/or the remedial actions required for the PCB issues at the property.

4.1 ADDITIONAL SITE EXPLORATION

In order to verify the geometry of the existing seawalls, the location and makeup of the underground sewer culvert, and determine the existing subsurface soil conditions it is recommended that the following site explorations be undertaken. Due to the presence of PCB contamination, the drilling contractor must utilize crews that are OSHA-40 hour trained.

1. Perform four test pits on the pier side of the seawalls to better classify the backfill material used and to verify the seawall thicknesses at known depths.

2. Perform two to three test pits to ascertain the depth to the top of the sewer culvert and its construction. One test pit should be performed above the culvert in the general location of the previous sinkhole mentioned above.

3. Perform six standard penetration drive sample borings inshore of the seawall to obtain the existing soil composition, changes in strata, relative density, and depth to bedrock to better allow the estimation of the allowable soil bearing pressure and engineering properties of the backfill.

4.2 SEAWALL REPAIRS

Based upon the preliminary analysis of the existing seawalls and the assumption that the existing seawalls are not founded on bedrock, is it is unlikely that strengthening or replacing the existing seawalls could be economically undertaken to permit the additional loading of the walls. Therefore, the following options have been developed to repair the seawalls while developing the site for use as a marina, parking, and pedestrian / public area.

In the event the test borings (recommended above) reveal that the existing seawalls are founded directly on bedrock, a further review/analysis of the seawalls should be undertaken to determine if additional loading is possible. Should bedrock be revealed to be at a relatively shallow depth (less than 25+/- ft) below the existing seawalls, the following options will need to be revisited as there may not be sufficient depth to anchor the steel piling as described below.

1. Repair the seawalls by repairing the voids and displaced stones and performing measures to limit the loss of backfill from behind the walls due to tidal action. This would include excavating down approximately 8 ft behind the perimeter of the seawalls, lining the back of the wall and bottom of excavation with a geo-textile fabric, and backfilling the excavation. A portion of the material excavated from the site would be utilized as backfill, if confirmed to be free of PCB contamination.

   In order to prohibit any additional loading of the existing seawalls, elements of the site development (i.e. fill and parking area) would be offset approximately 36 feet from the face of the seawall. This resulting strip of land between the face of the seawall and parking area could be utilized as a linear park for pedestrian and public access around the perimeter of the site. See Figure No. 3.

2. Repair the seawalls by repairing the voids and displaced stones and performing measures to limit the loss of backfill from behind the walls due to tidal action. This would include excavating down approximately 8 ft behind the perimeter of the seawalls, lining the back of the wall and bottom of excavation with a geo-textile fabric, and backfilling the excavation. A portion of the material excavated from the site would be utilized as backfill, if confirmed to be free of PCB contamination.

   In order to prohibit any additional loading of the existing seawalls, install a steel sheet piling wall inshore of the existing seawalls that is properly tied back with a deadman system. As a result, elements of the site development (i.e. fill and parking area) would be offset approximately 15 feet from the face of the seawall. This resulting strip of land between the face of the seawall and parking area could be utilized as a linear park for pedestrian and public access around the perimeter of the site. See Figure No. 4.

3. Drive new steel piling on the river side of the pier around the perimeter of the site, and fill the space between the sheet piling and seawalls with flowable fill/concrete. A deadman system would be required to properly anchor piling. This option would essentially replace the existing seawall with a new wall offset from the face of the existing seawall and would allow the capping and full use of the site for development. See Figure No. 5.

   This option would require the filling of waters of the Taunton River; hence Chapter 91 licensing issues could be more difficult than either of the above options.

It should be noted that the rehabilitation / repair of the seawalls and the development of the site may entail a combination of the options presented above.

5.0 BUDGETARY COSTS

BETA has prepared the following budgetary cost estimates for the above recommendations. Please note that the seawall repair costs are based upon preliminary concepts and limited site information and are intended to provide order of magnitude costs for the suggested repairs.

5.1 ADDITIONAL SITE EXPLORATION

1. Four (4) test pits to determine seawall and backfill composition $ 3,500
2. Three (3) tests pits to determine sewer culvert depth / composition (If performed in conjunction with Item 1 above) $ 1,500
3. Six (6) standard penetration drive sample borings $ 12,000

5.2 SEAWALL REPAIRS

The following budgetary costs have been provided for the potential options recommended above.

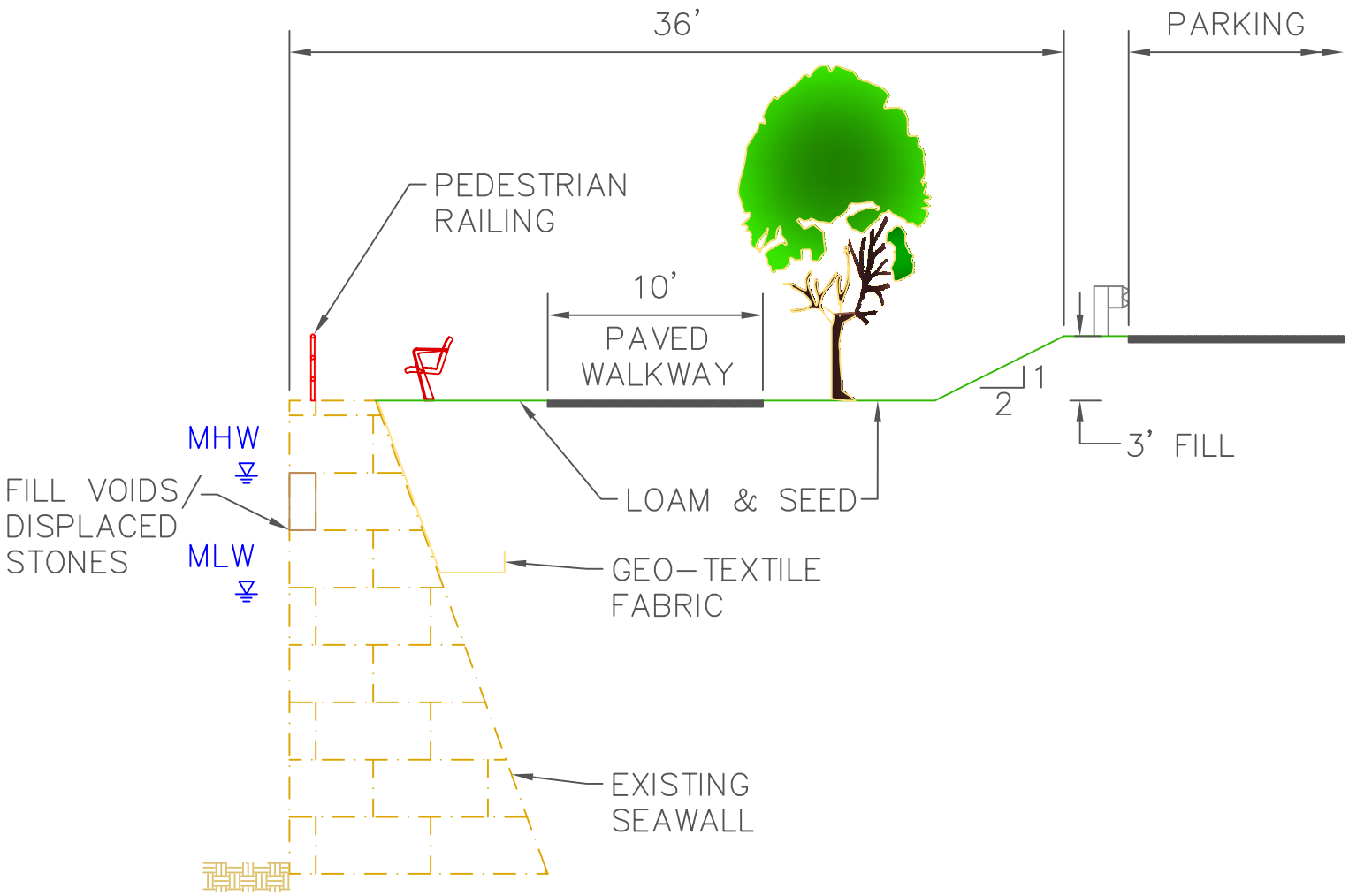
1. Seawall repairs with offset development $ 750,000
2. Seawall repairs with inshore support system $2,300,000
3. New wall around perimeter of site $3,400,000

FIGURES

FIGURE No. 3 - SEAWALL REPAIR OPTION 1

FIGURE No. 4 - SEAWALL REPAIR OPTION 2

FIGURE No. 5 - SEAWALL REPAIR OPTION 3

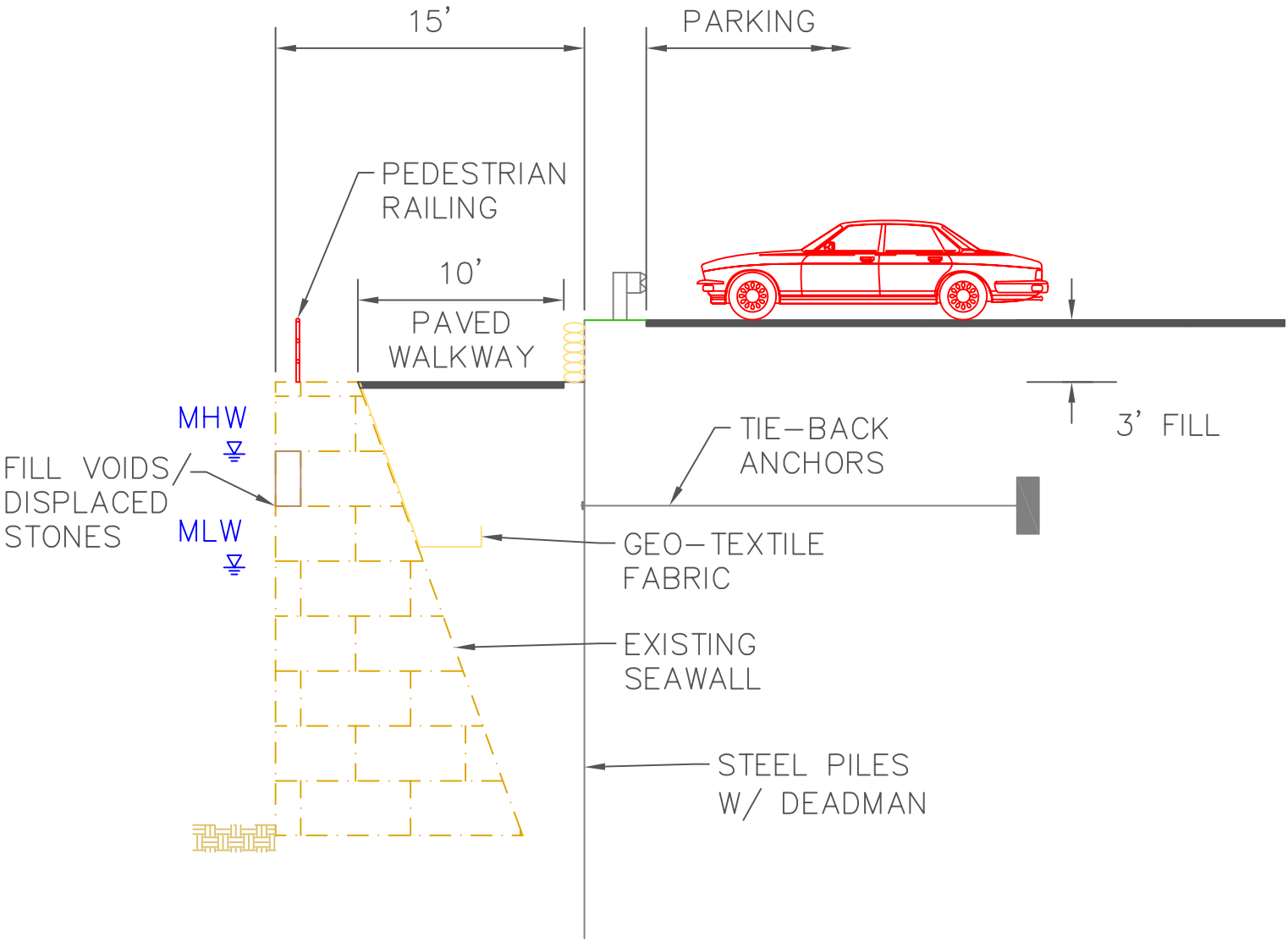


SCALE: 1/8"=1'-0"

BETA Group, Inc.
Engineers•Planners•Landscape Architects•Scientists
315 Norwood Park South
Norwood, MA 02062
781.255.1982
email: BETA@BETA-inc.com

City Pier
Fall River, MA
Scale: As Shown

FIGURE No. 3
Seawall Repairs - Option 1

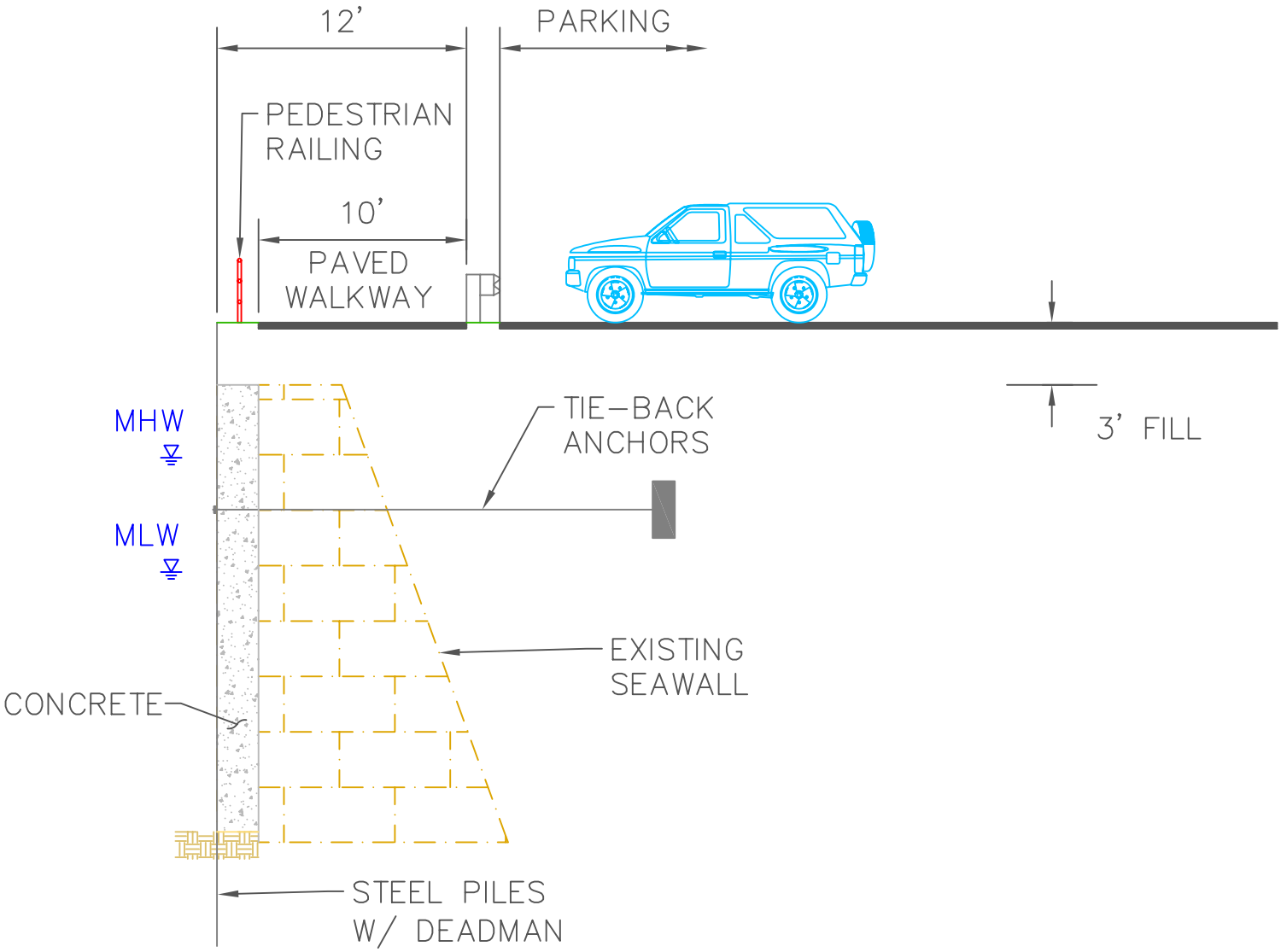


SCALE: 1/8"=1'-0"

BETA Group, Inc.
Engineers•Planners•Landscape Architects•Scientists
315 Norwood Park South
Norwood, MA 02062
781.255.1982
email: BETA@BETA-inc.com

City Pier
Fall River, MA
Scale: As Shown

FIGURE No. 4
Seawall Repairs - Option 2



SCALE: 1/8"=1'-0"

BETA Group, Inc.
Engineers•Planners•Landscape Architects•Scientists
315 Norwood Park South
Norwood, MA 02062
781.255.1982
email: BETA@BETA-inc.com

City Pier
Fall River, MA
Scale: As Shown

FIGURE No. 5
Seawall Repairs - Option 3

APPENDIX A

SEAWALL INSPECTION
by
CHILDS ENGINEERING CORPORATION

CHILDS ENGINEERING CORPORATION
BOX 333 MEDFIELD, MASSACHUSETTS 02052 508/359-8945 FAX 508/359-2751

David L. Porter, P.E.
President

Craig D. Sams, P.E.
Vice President

August 23, 2010

Mark Gersham
BETA Group, Inc.
315 Norwood Park South
Norwood, MA 02062

Re: Seawall Inspection at City Pier, Fall River, MA

Dear Mr. Gersham,

On August 9, 2010 engineer/divers from Childs Engineering Corporation completed an underwater inspection of approximately 1440 LF of stone seawall that forms the perimeter of City Pier on Davol Street, Fall River, MA. The three-man dive team consisted of one engineer/diver using SCUBA equipment, one engineer/tender and one engineer/supervisor. The underwater inspection included a visual examination of the accessible components of the stone seawall and measurement of exposed wall heights using a sounding tape.

Description

City Pier is located approximately 0.5 miles north of the Braga Bridge on the east bank of the Taunton River. The structure consists of stone block seawalls that retain a core of earth fill. City Pier can be divided into three sections. The main pier is 260 feet wide and extends 300 feet into the river; the south leg is 60 feet wide and extends 180 feet into the river; and the north leg is 100 feet wide and extends 330 feet into the river. A 200 foot long riprap breakwater extends into the river beginning at the northwest corner of the north leg. Exposed wall heights vary between 0 and 17.5 feet.

The site is currently vacant and the backlands consist of grass and small trees. According to a Site Assessment Application prepared by the Fall River Redevelopment Authority, the site was first used as a lumber yard from1888 to 1950. Since then, City Pier has been used for boat storage, a marina, and storage of construction equipment and materials.

Observed Conditions

The stone seawalls that form the perimeter of City Pier consist of rectangular stone blocks that are typically 18 to 24 inches high and up to 8 feet long. However, the individual stone blocks are not perfectly square, resulting in courses that vary in thickness. The stones are dry laid. Horizontal and vertical joints are typically 1” to 3”,

though some are up to 12 inches wide. Chink stones are typically placed in horizontal joints to improve bearing.

The inspected seawall consists of eight distinct segments. We have arbitrarily numbered the southernmost segment Wall No. 1. The entire seawall length was stationed, with Station 0+00 located at the east end of wall No. 1. Specific areas of concern are noted on Sheet X-101and described below.

Seawall No.1

Seawall No. 1 is 482 feet long and runs east to west. Exposed wall heights vary between 0.0 feet at the east end to 14 feet at the west end. At Station 4+80 the slope of the mudline is approximately 2:1 away from the toe of the seawall. Specific anomalies include five large voids in the seawall at Stations 1+60, 1+90, 2+35, 3+20 to 3+32, and 3+50; collapse of the top two courses at Station 4+80 resulting in stones that have either been displaced or fallen into the water; and loss of up to two feet of backfill immediately inshore of the wall (see Photos 1 and 2).

Seawall No. 2

Seawall No. 2 is 54 feet long and runs south to north. Exposed wall heights vary between 14 feet at the south end to 12 feet at the north end. Specific anomalies include one large void at Station 5+28 at the mudline; loss of up to two feet of backfill immediately inshore of the wall; and displaced stones at Station 5+36 (see Photo 3). In addition, a 7 foot wide by 6 foot tall culvert is observed at the mudline at Station 5+05. The length or the purpose of the culvert was not determined.

Seawall No. 3

Seawall No. 3 is 184 feet long and runs west to east. Exposed wall heights vary between 12 feet at the west end to 9.5 feet at the east end. Specific anomalies include one large void at Station 6+52; seawall construction using smaller stones than typical at Station 5+92; evidence of settling at Station 6+80; and a capstone that overhangs the face of the seawall at Station 6+90.

Seawall No. 4

Seawall No. 4 is 100 feet long and runs south to north. Exposed wall heights vary between 9.5 feet at the south end to 10 feet at the north end. Specific anomalies include a large void and displaced stones at Station 7+80, and a large void at the mudline between Station 7+95 and 8+02 with stones observed on the mudline immediately next to the void (see Photo 4). Sinkholes along the north half of the seawall have been backfilled with 6-inch stone.

Seawall No. 5

Seawall No. 5 is 330 feet long and runs east to west. Exposed wall heights vary between 10 feet at the east end to 17.5 feet at the west end. The slope of the mudline is approximately 2:1 away from the toe of the seawall. Remnants of a concrete deck were observed on the seawall at the west end. Specific anomalies include six large voids in the seawall including two at Station 9+10, and one at Stations 9+30, 10+15, 10+85, and 11+50; evidence of wall rotation between Station 10+30 and 10+95; and wall construction using irregular stones between Station 8+90 and 9+10. In addition, the entire length of the seawall has been backfilled with 6-inch stone (see Photo 5).

Seawall No. 6

Seawall No. 6 is 60 feet long and runs south to north. Exposed wall heights vary between 17.5 feet at the south end to 0.0 feet at the north end where the breakwater begins. Steel beams protruding from a concrete cap are observed along the full length of Seawall No. 6 (see Photo 6). Specific anomalies consist of a large void in the seawall at Station 11+75.

Seawall No. 7

Seawall No. 7 is 456 feet long and runs west to east. Exposed wall heights vary between 13.5 feet to 0.0 feet at the east end where dumped stone riprap is located. Specific anomalies include three large voids in the seawall at Stations 13+85, 14+50, and 15+00; areas of active fill loss at stations 12+55 and 13+00; and evidence of wall rotation between Stations 13+80 to 14+25 and between Stations 16+00 to 17+00.

Seawall No. 8

Seawall No. 8 is 140 feet long and runs south to north. Exposed wall heights vary between 0.0 feet at both ends to 10.5 feet at the halfway point. The seawall has a new concrete cap and handrail, and the backlands is accessible to the public. The slope of the mudline is approximately 2:1. Specific anomalies include a large void in the seawall at Station 0+95, and a bulge in the seawall between Station 0+90 and 1+20 (see Photos 7 and 8).

Assessment

In general there are four types of failures observed in the stone seawalls of City Pier; voids in the seawall, displaced blocks, rotation/bulging of the seawall, and sinkholes. Voids in the seawall and displaced blocks are local conditions whereas rotation/bulging are signs of a more general foundation failure.

Voids in the seawall are the result of individual blocks falling out of the face of the seawall. As noted earlier, the blocks are not perfectly square and there are up to 12

inch horizontal and vertical gaps between stones. If chink stones fall out, or any wall movement occurs over time, it is possible for individual stones to fall out.

Displaced blocks are observed along the top of the southern and western seawalls. These seawalls are exposed to wave action from the southwest. Backfill is lost when these walls are overtopped and individual blocks are displaced by wave forces.

Rotation/bulging of the seawall may represent the original constructed condition or a foundation failure. The rotation observed along Seawall No. 7 may have been caused by a barge that was reportedly berthed there. The barge may have imposed horizontal loads on the wall that the wall was not designed to resist. Surcharge loads from the former lumber yard or from boat storage may have also contributed the rotation/bulging of the wall.

Sinkholes form when wave action or normal tide cycles cause fill behind the seawall to migrate through gaps between individual blocks or through voids in the seawall. Sinkholes are considered a wall failure because the area behind the seawall is no longer usable.

Recommendations

Our understanding is that the proposed development includes a proposal for the placement of an additional two to three feet of fill across the entire site. This additional surcharge load would increase horizontal loads on the seawall. A stability analysis of the seawalls is necessary to determine if the wall would remain stable under the additional loads. A stability analysis cannot be performed without additional information such as overall wall height, width of base, and foundation type.

If original construction drawings cannot be found, Childs recommends that an effort be made to obtain this information in the field by digging test pits and by drilling test borings inshore of the wall. Test pits would allow us to classify the backfill material used and to determine wall thicknesses at known depths. Test borings and Standard Penetration Tests would allow us to estimate the engineering properties of the backfill and underlying soil strata. Test borings can also help determine if a dense soil stratum exists relatively close to the mudline. If a dense stratum does exist, we could infer that the seawalls are not supported by piles but by spread footings.

Recommendations for repair depend on the results of the test pit and test boring program and the stability analysis. Assuming that the seawalls can support an additional two to three feet of fill, we would recommend the following;

- Repair large voids in-kind. In some areas this could be as simple as replacing and re-chinking individual stones that have fallen out, or it could require removal and reconstruction of significant portions of the seawall.

- Replace displaced blocks and rebuild the collapsed corner at Station 4+80. The new blocks should be larger than existing blocks, and they should be dowelled together to resist wave action from the southwest.
- Excavate behind all seawalls to mean low water, place filter fabric along the inshore face of the seawalls, and backfill with stone. This will prevent migration of fines through gaps between stones.
- Rebuild in-kind portions seawalls that exhibit bulging and/of rotation.

If the stability analysis shows that the seawalls are not stable with the additional surcharge loads, the following alternatives can be considered;

- Demolish the existing stone seawalls and build new stone seawalls with foundations and dimensions that provide stability.
- Excavate behind the seawall, dowel into individual blocks, and place tremie concrete into the excavation. This would create a massive gravity structure that improves stability, prevents individual blocks from falling out, and prevents formation of sinkholes in the future.
- Drive new sheetpiling around the perimeter of City Park, and fill the space between the sheetpiling and seawall with permeable fill.

The first two options require excavation and dewatering to gain access to the inshore face of the seawall. The presence of PCB's in the backfill may increase the cost of these options. The third option requires excavation to install tierods and an anchorage system, but not dewatering. The third option could be designed to support more than a three foot increase in the elevation of the site.

We look forward to your comments and questions. If you need additional information, please contact the undersigned.

Respectfully submitted,

Fred Radcliffe

CHILDS ENGINEERING CORPORATION

Photo 1: Seawall No.1; individual blocks not square, courses vary in thickness. Note voids in seawall.

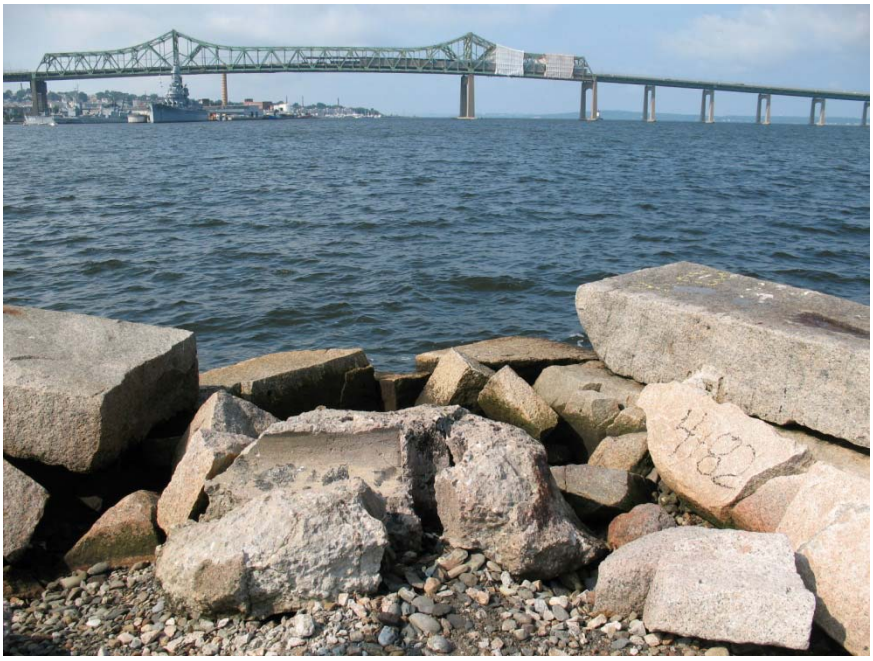


Photo 2: Seawall No.1, STA 4+80; Displaced blocks at corner.

Photo 3: Seawall No.2, STA 5+36; Displaced blocks at corners and loss of up to 2 feet of backfill.

Photo 4: Seawall No.4; Voids in seawall, some blocks observed on mudline.

Photo 5: Seawall No.5, STA 10+00; Seawall has been backfilled with 6-inch stone.

Photo 6: Seawall No.6; Note concrete cap directly on top of seawall with steel beams protruding from the cap.

Photo 7: Seawall No.7, STA 13+85; Void in seawall 3’ from top. Note block above void that is sliding downward.

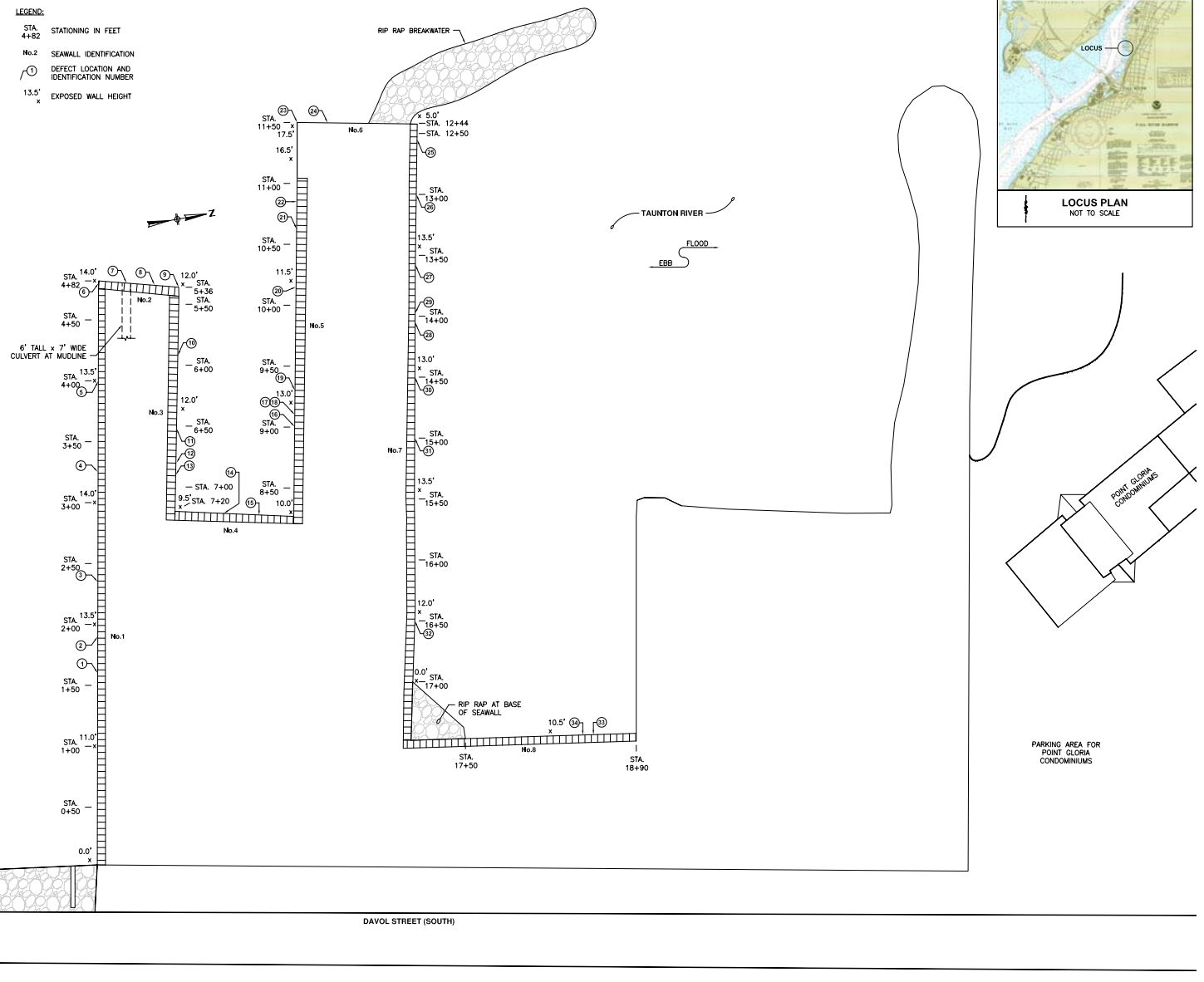
Photo 8: Seawall No.7, STA 18+40 to 18+70; Seawall rotating/bulging outshore.

LIST OF DEFECTS:

1. STA. 1+60, 24" TALL x24" WIDE x 4' DEEP VOID IN SEAWALL @ EL. +2.0' MLLW.
2. STA. 1+90, 6' TALL x 6' WIDE x 5' DEEP VOID IN SEAWALL @ EL. +2.0' MLLW. STONE OBSERVED ON MUDLINE.
3. STA. 2+35, 8' TALL x 7' WIDE x 3 TO 5' DEEP VOID IN SEAWALL @ EL. +1.0' MLLW.
4. STA. 3+20 TO 3+32, VOID IN SEAWALL BETWEEN EL. +1.0' MLLW AND MUDLINE, 9' DEEP.
5. STA. 3+50, 18" TALL x 24" WIDE x 8' DEEP VOID IN SEAWALL @ MUDLINE.
6. STA. 4+80, STONE FROM TOP 2 COURSES OF SEAWALL HAVE EITHER SHIFTED OR FALLEN INTO THE WATER.
7. STA. 5+05, 6' TALL x 7' WIDE CULVERT AT MUDLINE.
8. STA. 5+28, 3' TALL x 4' WIDE x 4' DEEP VOID IN SEAWALL @ MUDLINE.
9. STA. 5+36, STONE FROM TOP 2 COURSES OF SEAWALL HAVE EITHER SHIFTED OR FALLEN INTO THE WATER.
10. STA. 5+92, SEAWALL CONSTRUCTED WITH SMALLER STONE BETWEEN EL. −1.0' TO +6.0' MLLW.
11. STA. 6+52, 12" TALL x 24" WIDE x 2' DEEP VOID IN SEAWALL @ EL. −1.0' MLLW.
12. STA. 6+80, INDIVIDUAL STONE UNSUPPORTED BY CHINK STONE AND SETTLING DOWN.
13. STA. 6+90, CAPSTONE OVERHANGING FACE OF SEAWALL 6" TO 12".
14. STA. 7+80, 6' TALL x 4' WIDE x 4' DEEP VOID IN SEAWALL. FOURTH COURSE OVERHANGING FIFTH COURSE BY 12".
15. STA. 7+95 TO 8+02, BOTTOM 2 COURSES HAVE FALLEN OUT OF SEAWALL, STONES OBSERVED ON MUDLINE.
16. STA. 8+90 TO 9+10, WALL CONSTRUCTED WITH IRREGULAR STONES.
17. STA. 9+10, 24" TALL x 3' WIDE x 4' DEEP VOID IN SEAWALL 24" ABOVE MUDLINE.
18. STA. 9+10, 3' TALL x 4' WIDE x 5' DEEP VOID IN SEAWALL @ EL. +1.0' MLLW.
19. STA. 9+30, 12" TALL x 3' WIDE x 4' DEEP VOID IN SEAWALL 24" ABOVE MUDLINE WITH STONE OBSERVED ON MUDLINE.
20. STA. 10+15, 24" TALL x 7' WIDE x 24" DEEP VOID IN SEAWALL 24" ABOVE MUDLINE.
21. STA. 10+30 TO 10+95, TOP OF SEAWALL ROTATING OUTSHORE.
22. STA. 10+85, 24" TALL x 4' WIDE x 3' DEEP VOID IN SEAWALL 2 COURSES FROM TOP OF SEAWALL.
23. STA. 11+50, 24" TALL x 30" WIDE x 4.5' DEEP VOID IN SEAWALL 3' ABOVE MUDLINE.
24. STA. 11+75, 12" TALL x 12' WIDE x 5' DEEP VOID IN SEAWALL @ MUDLINE.
25. STA. 12+55, ACTIVE LOSS OF FILL OBSERVED THROUGH GAP IN WALL @ MUDLINE.
26. STAL 13+00, ACTIVE LOSS OF FILL OBSERVED THROUGH GAP IN WALL @ MUDLINE.
27. STA. 13+85, 24" TALL x 4' WIDE x 4' DEEP VOID IN SEAWALL APPROXIMATELY 3' FROM TOP OF SEAWALL.
28. STA. 13+80 TO 14+25, TOP OF SEAWALL ROTATING OUTSHORE.
29. STA. 13+90 TO 14+05, BOTTOM 3 COURSES STICKING OUT 24", STONES IRREGULAR, SIZE VARIES.
30. STA. 14+50, 24" TALL x 24" WIDE x 5' DEEP VOID IN SEAWALL, ACTIVE LOSS OF SEAWALL.
31. STA. 15+00, 3' TALL x 24" WIDE x 4' DEEP VOID IN SEAWALL 5 COURSES FROM TOP OF SEAWALL.
32. STA. 16+00 TO 17+00, TOP OF SEAWALL ROTATING OUTSHORE.
33. STA. 18+40 TO 18+70, SEAWALL BULGING OUTSHORE.
34. STA. 18+45, 3' TALL x 3' WIDE x 4' DEEP VOID IN SEAWALL.

LEGEND:

- STA. 4+82 — STATIONING IN FEET
- No.2 — SEAWALL IDENTIFICATION
- ① — DEFECT LOCATION AND IDENTIFICATION NUMBER
- 13.5' x — EXPOSED WALL HEIGHT



SITE PLAN
SCALE: 1"=40'-0"

LOCUS PLAN
NOT TO SCALE

CHILDS ENGINEERING CORPORATION
BOX 333 MEDFIELD, MASSACHUSETTS 02052 U.S.A.
Phone: (508) 359-4441 Fax: (508) 359-4701
E-mail: mail@childseng.com

Mark	Description	Date	Appr.

Designed by	FAR	Date	08/13/10
Drawn by	APL	Chkd by	FAR
Reviewed by	FAR	Design file no.	223210-01
		Scale	1"=40'-0"

UNDERWATER INSPECTION
CITY PIER SEAWALL
DAVOL ST., FALL RIVER, MA

SITE PLAN AND EXISTING CONDITIONS

Sheet reference number: X-101
Sheet 1 of 1

AL LEDUC K:\2232-10.00 FALL RIVER CITY PIER PROJECT - BETA\CADD\CURRENT WORKING DWGS\223110.01 SITE PLAN AND CONDITIONS.DWG Aug 23, 2010 - 2:10pm

APPENDIX B

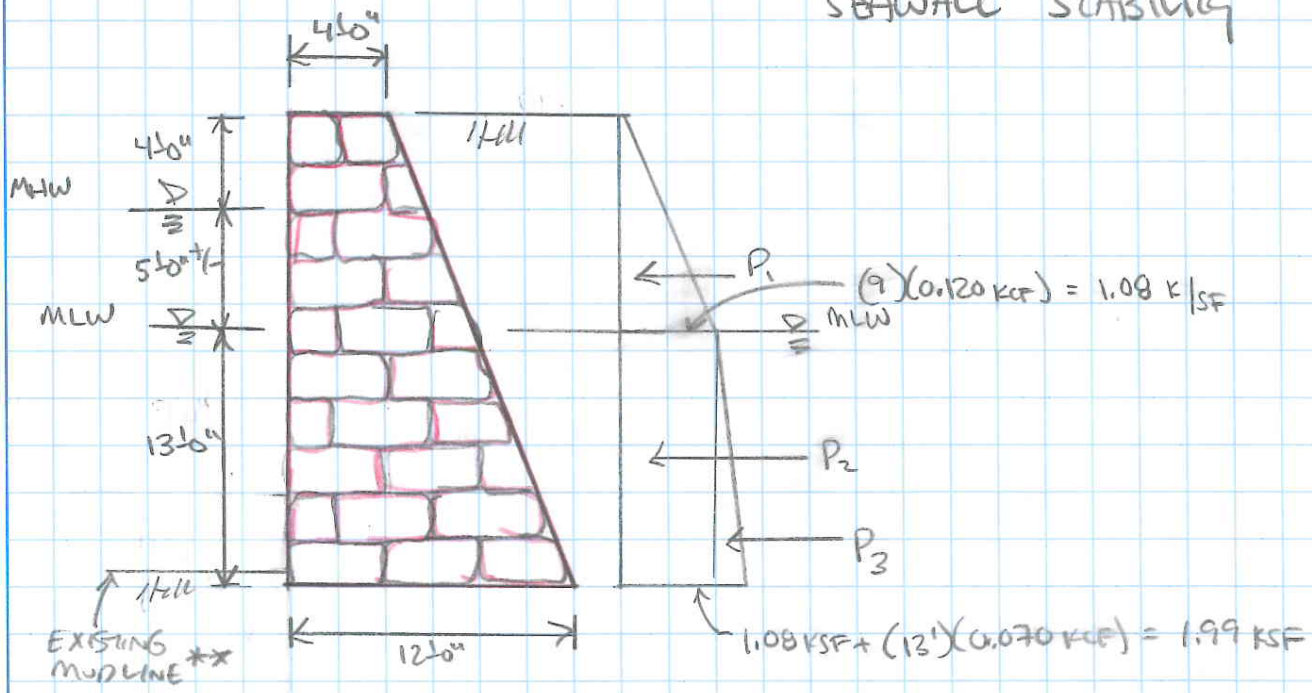
PRELIMINARY SEAWALL ANALYSIS

BETA Group, Inc.
Engineers • Scientists • Planners

JOB CITY PIER No. 3719
CALCULATED BY MRG DATE 9/17/10
CHECKED BY DATE
DESCRIPTION SHEET NO. 1

CITY PIER - FALL RIVER

SEAWALL STABILITY



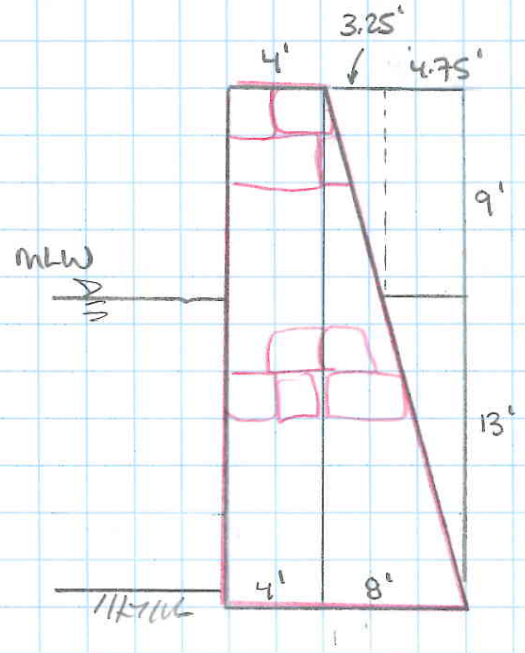
WALL X-SECTION

DEP LICENSE No. 2156 DATED JUNE 1998

		FIELD INSPECTION
SEAWALL No. 1	≈ 518 FT	= 482' ✓
SEAWALL No. 2	≈ 62 LONG	= 54' ✓
SEAWALL No. 3	≈ 190 FT LONG	≈ 184' ✓
SEAWALL No. 4	≈ 100 FT LONG*	≈ 100' ✓

* SECTION ABOVE ONLY NOTED FOR 60 FT OF SEAWALL No. 4

** DEP LICENSE No. 3526 SHOWS THE BTM OF SEAWALL JUST BELOW THE MUDLINE
∴ IGNORE ALL SOIL INFRONT OF THE SEAWALL



ASSUMPTIONS:

STONE = 165 PCF
SOIL = 120 PCF
$SOIL_{SUB}$ = 70 PCF

K_a = 0.33
NO SURCHARGE LOADING

IGNORE FILL INFRONT OF SEAWALL

	RESISTING FORCES			ARM		MOMENT
STONE WALL	4'(22')(0.165 KCF)	=	14.5 K/LF	x 2'	=	29.0 KFT
	1/2(22')(8')(0.165 KCF)	=	14.5 K	x 6.7'	=	96.8
BACKFILL	1/2(3.25)(9')(0.120 KCF)	=	1.8 K	x 6.2'	=	10.9
	4.75(9')(0.120 KCF)	=	5.1 K	x 9.6'	=	49.4
	1/2(13)(4.75)(0.070 KCF)	=	2.2 K	x 10.4'	=	22.5
			30.1 K/LF			208.5 KFT/LF

OVERTURNING FORCES

EARTH	$P_1 = 1/2(9^2)(0.120 KCF)(0.33)$	=	1.6 K	x 16'	=	25.7 KFT
	P_2 = 1.08 KSF (0.33)(13')	=	4.6 K	x 6.5'	=	30.1
	P_3 = (1.99 - 1.08 KSF)(13')(1/2)(0.33)	=	2.0	x 4.3	=	8.4
			8.2 K			64.2 KFT

WATER PRESSURE EQUAL ON BOTH SIDES

STABILITY

OVERTURNING $\frac{M_R}{M_O} = \frac{208.5 \text{ KFT}}{64.2 \text{ KFT}} = 3.2$ OK

SLIDING $\frac{38.1 \text{ K}(0.50)}{8.2} = 2.3$ OK (0.50 ✓ ASSUMED FRICTION FACTOR)

BEARING PRESSURE

$\text{RESULTANT} = \frac{M_R - M_O}{V} = (208.5 - 64.2 \text{ KF}) / 38.1 \text{ K}$

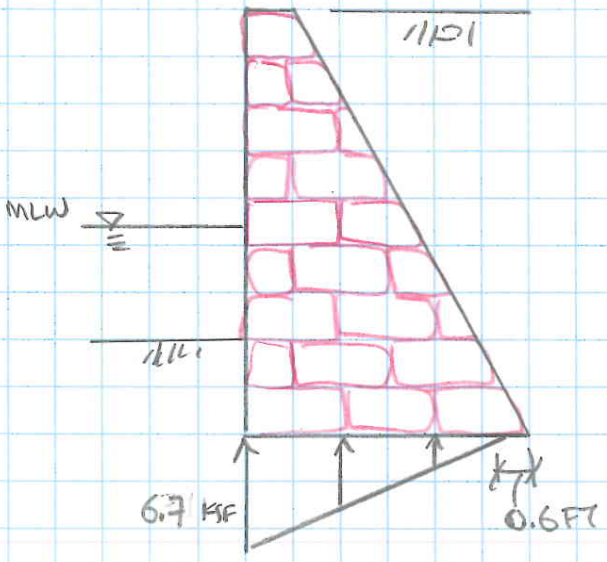
$= 3.78 \text{ FT}$

$e = B/2 - R = \frac{12}{2} - 3.78 \text{ FT} = 2.21 \text{ FT}$

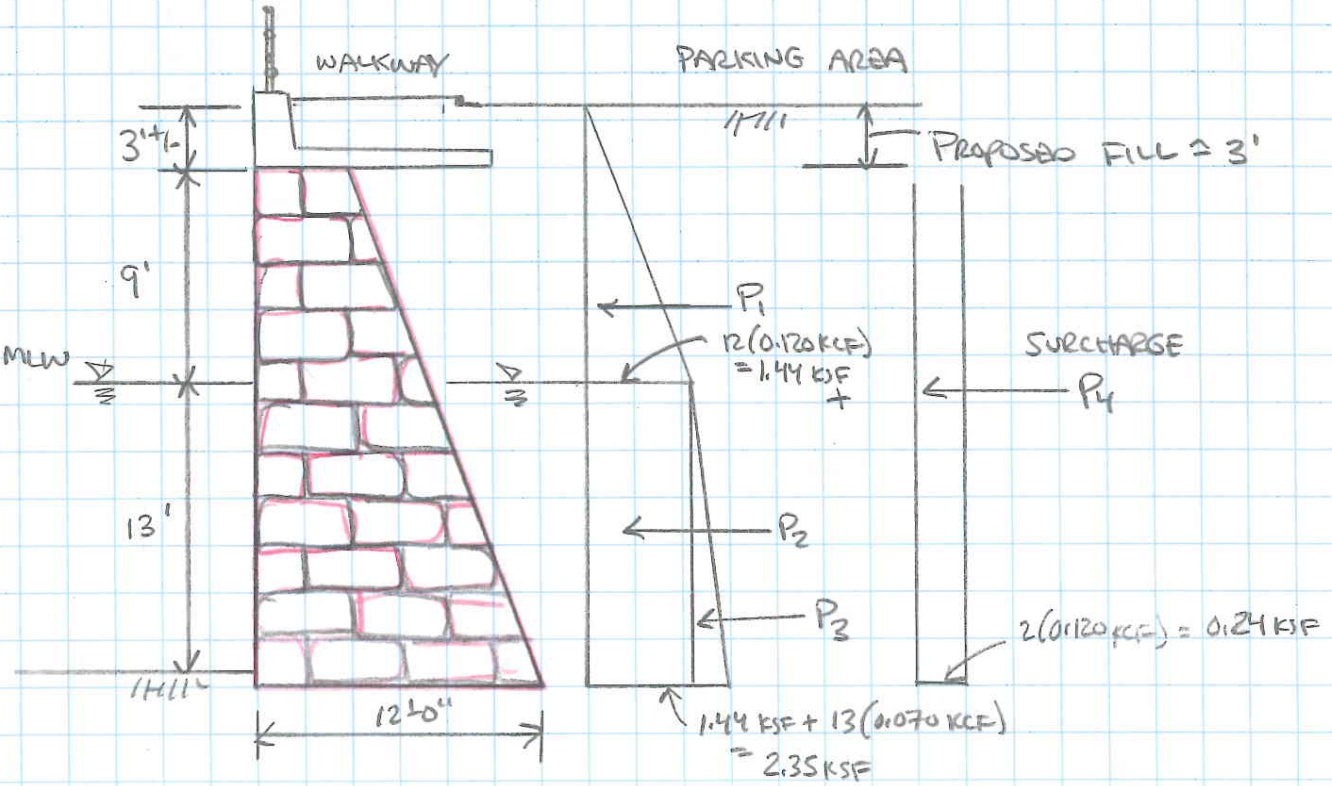
ECCENTRICITY (e) = 2.21 FT IS BETWEEN MIDDLE THIRD & MIDDLE HALF OF THE FOOTING WIDTH ∴ $q_{TOE} = q_{MAX}$ & $q_{HEEL} = 0$

$q_{MAX(TOE)} = \frac{2(38.1 \text{ K})}{3(12/2 - 2.21 \text{ FT})} = 6.71 \text{ KSF} \triangleq 6700 \text{ PSF}$

$q_{MIN} = 0 \text{ KSF}$ @ $3(12/2 - 2.21) = 11.4 \text{ FT}$ ∴ LAST 0.6 FT OF SEAWALL IN "TENSION"



NOTE: BEARING PRESSURE APPEARS HIGH



PROPOSED X-SECTION

LIVE LOAD SURCHARGE = 2'-0" OF ADDITIONAL FILL (AASHTO)

RESISTING FORCES

CAP / MOMENT SLAB	3'(4')(0.150 KCF) = 1.8 K/LF	x 2'	= 3.6 KIP/F
SURCHARGE + FILL	(2'+3')(0.120 KCF)(8') = 4.8 K	x 8'	= 38.4
EXISTING WALL/SOIL	38.1 K		= 208.5
	44.7 K		250.5 KIP

OVERTURNING FORCES

EARTH $P_1 = 1.44\ KSF(12')(1/2)(0.33) = 2.85^K \times 17' = 48.5\ KFT$

$P_2 = 1.44\ KSF(13')(0.33) = 6.2^K \times 6.5' = 40.2$

$P_3 = (2.35-1.44\ KSF)(13)(1/2)(0.33) = 2.0 \times 4.3 = 8.5$

SURCHARGE $P_4 = 0.24\ KSF(25')(0.33) = 2.0 \times 12.5' = 24.8$

$13.1\ K$ $122\ KFT$

STABILITY

OVERTURNING $F.S = \frac{250.5\ KFT}{122\ KFT} = 2.0$ OK

SLIDING $F.S = \frac{44.7^K(0.50)}{13.1\ K} = 1.7$ OK

RESULTANT (R) $R = \frac{(250.5\ KFT - 122\ KFT)}{44.7\ K} = 2.87\ FT$

ECCENTRICITY $e = B/2 - R$

$= 12/2 - 2.87' = 3.12\ FT > B/4$ ∴ OUTSIDE MIDDLE HALF OF FTG

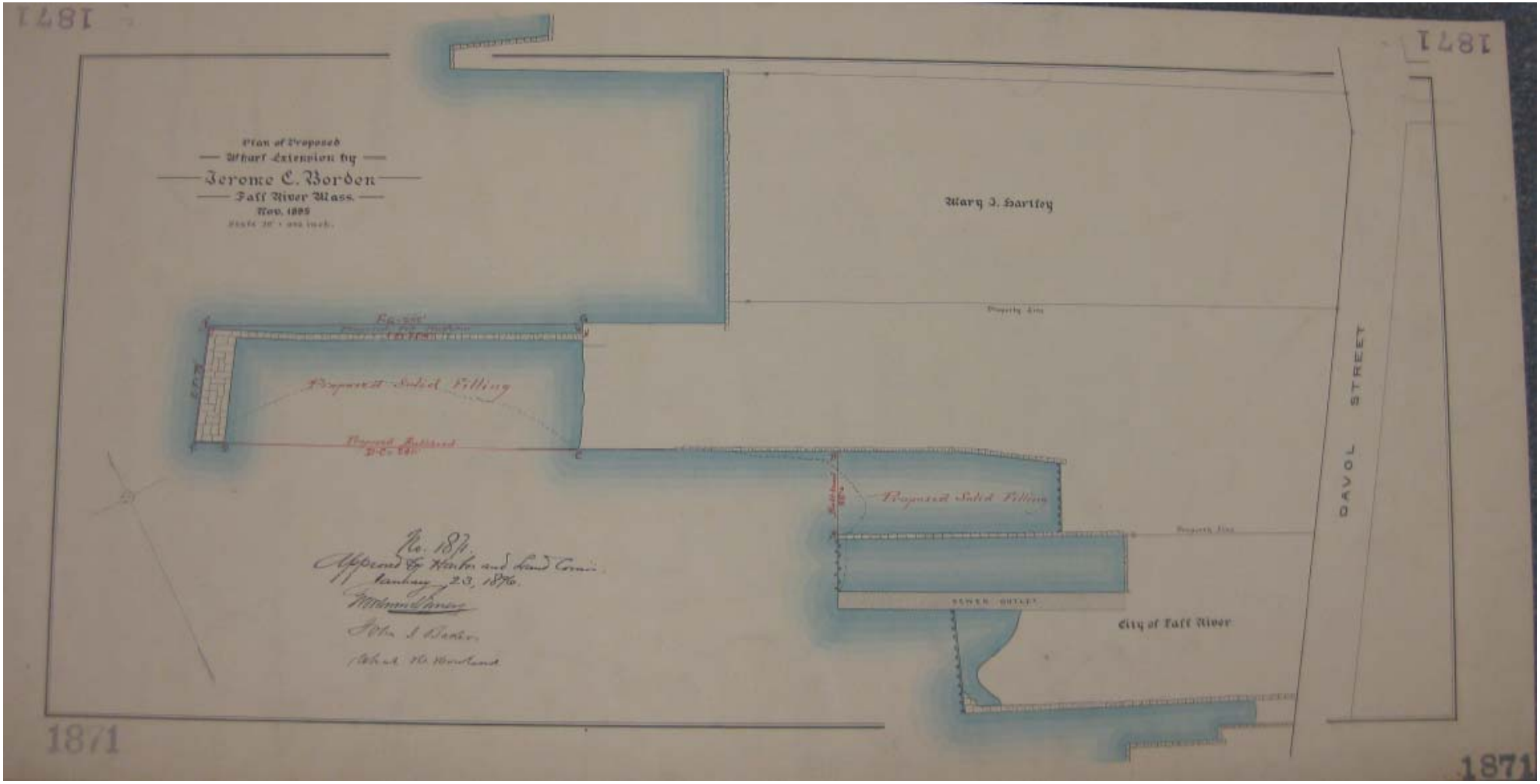
$q_{MAX} = 2(44.7^K) / 3(12/2 - 3') = 9.93\ KSF$ NG

(SAY B/4 MIDDLE 1/2)

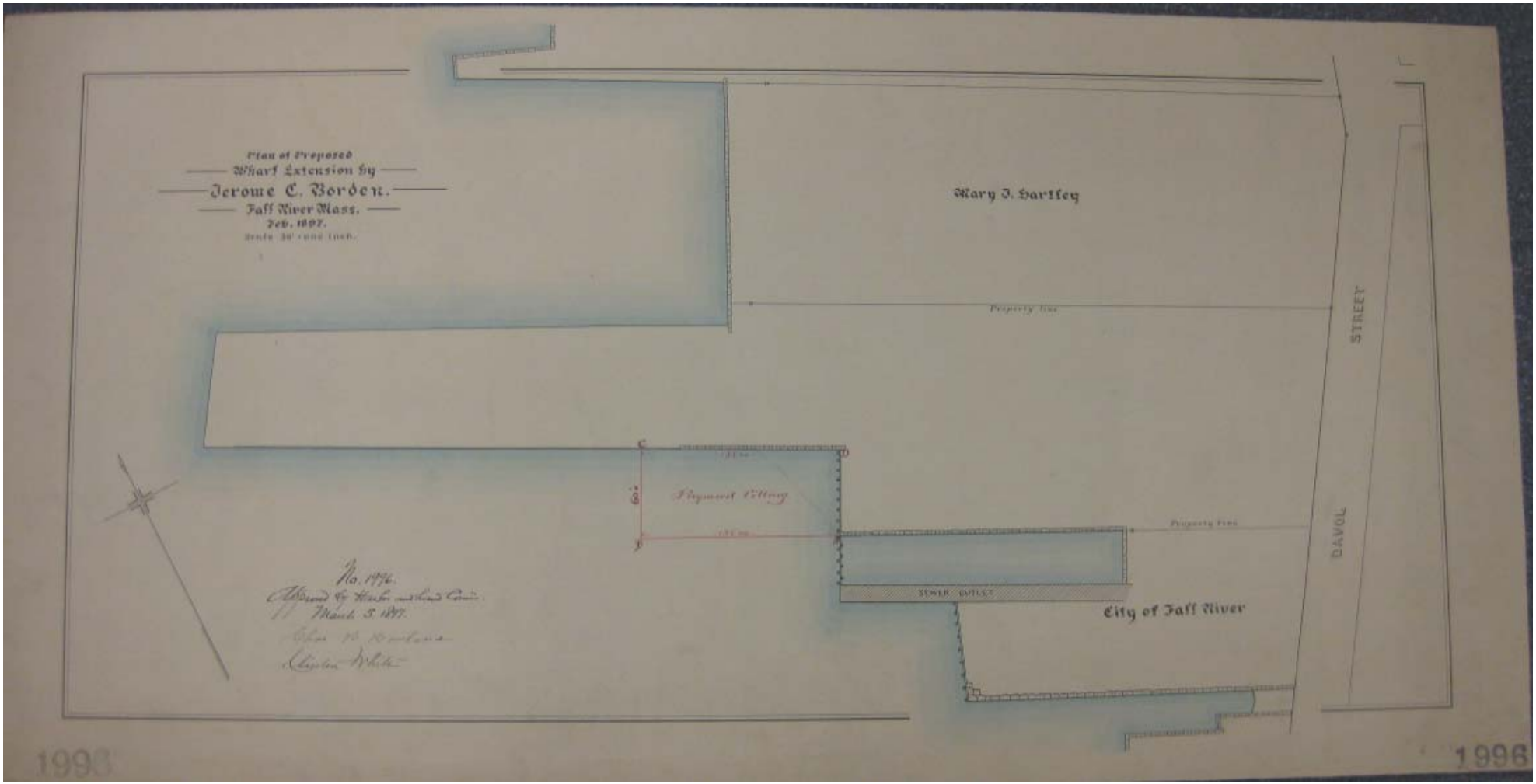
NOTE: FOR FOOTING ON SOIL ECCENTRICITY MUST BE $< B/6 (2'-0")$
∴ NO GOOD

APPENDIX C

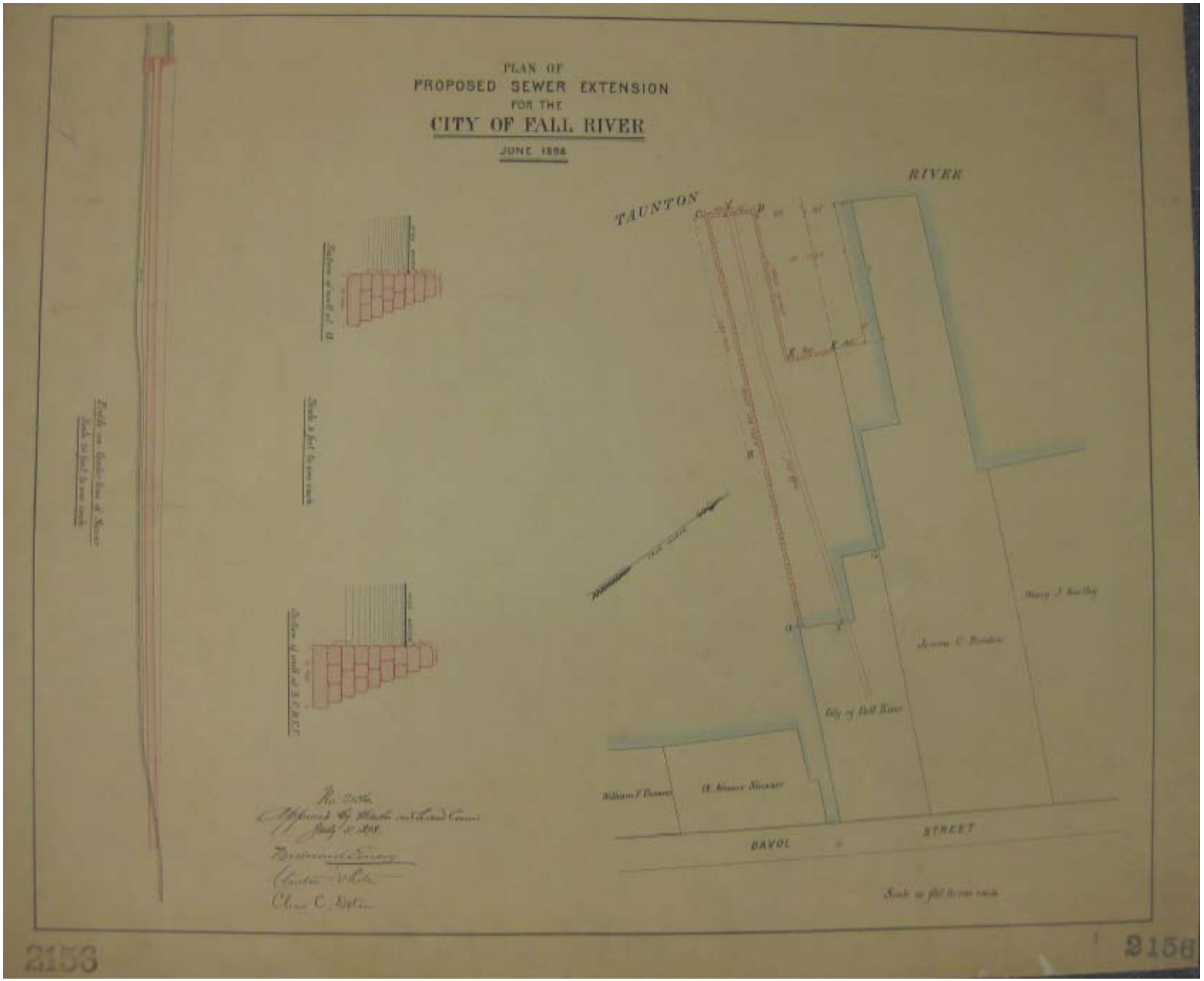
HISTORICAL DEP LICENSES



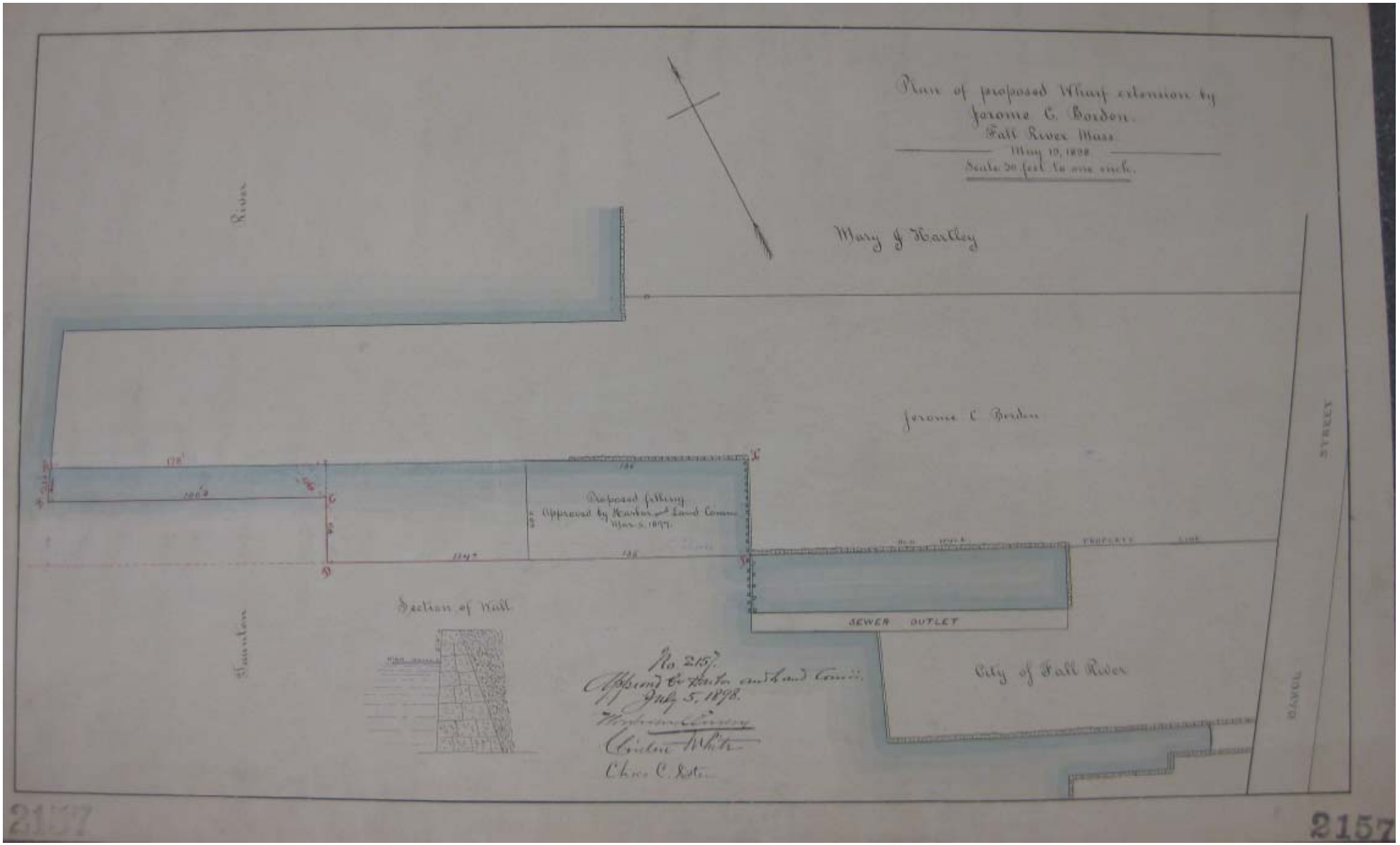
DEP License No. 1871
dated: January 23, 1896



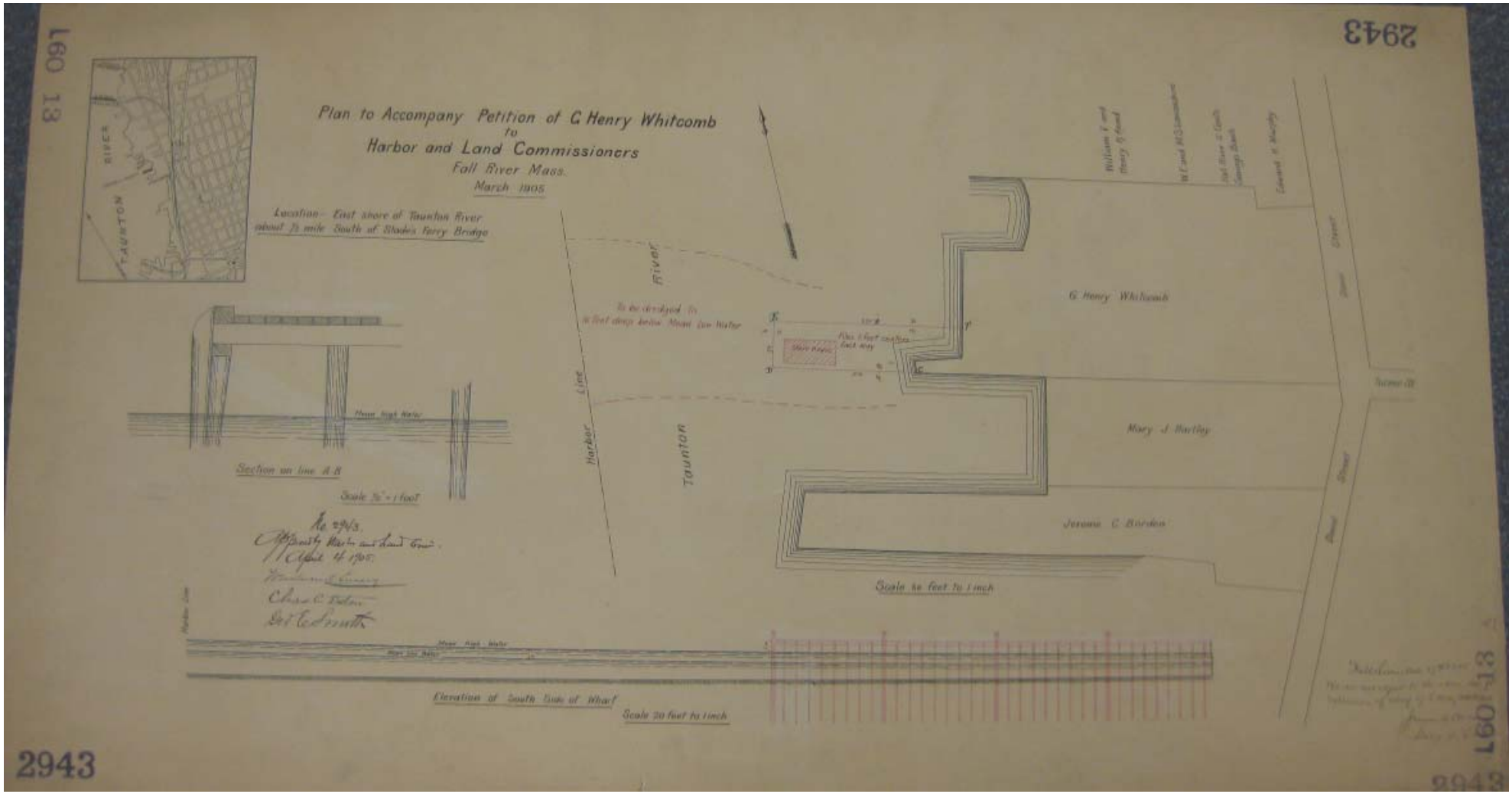
DEP License No. 1996
dated: March 5, 1897



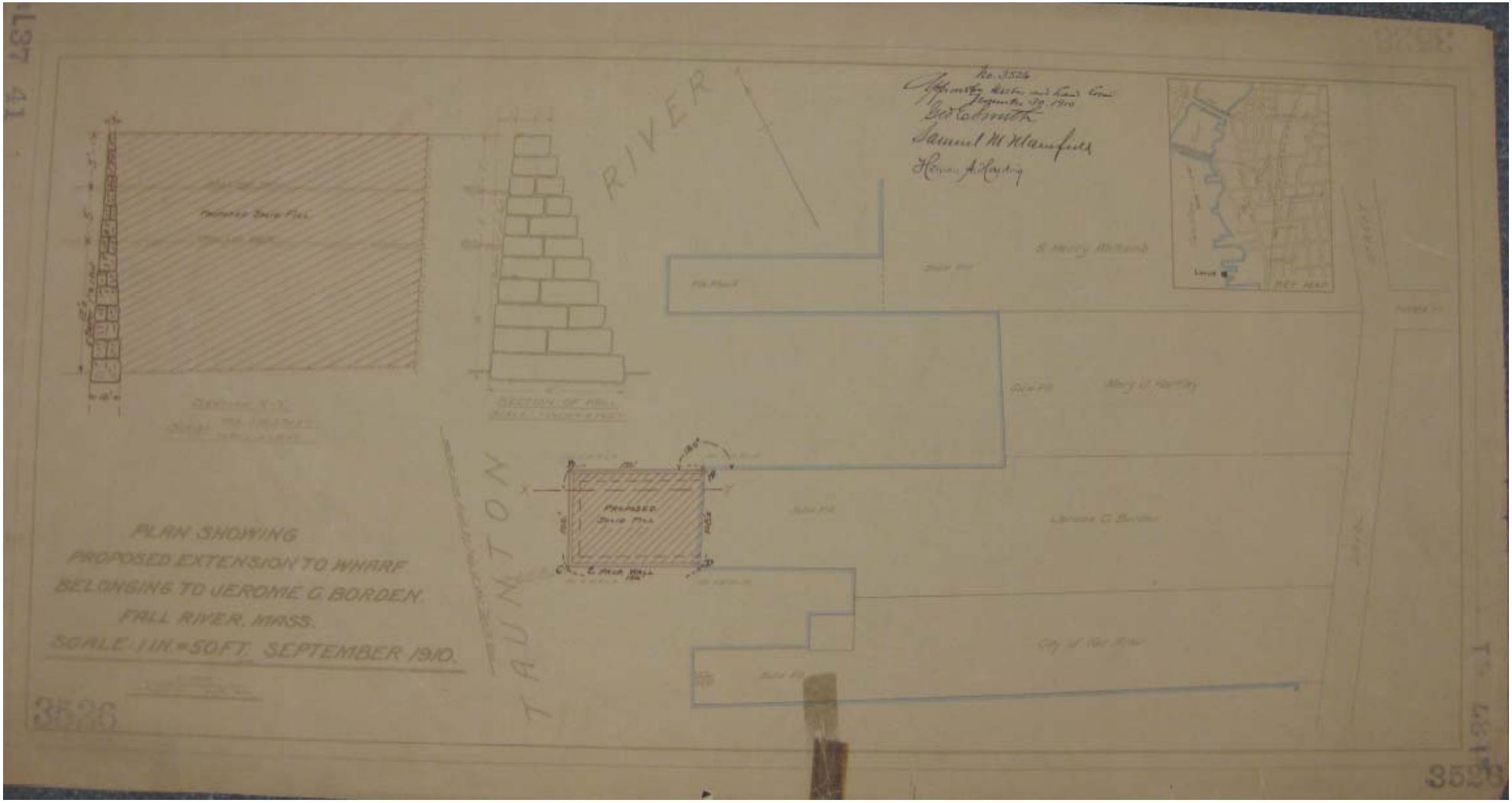
DEP License No. 2156
dated: July 5, 1898



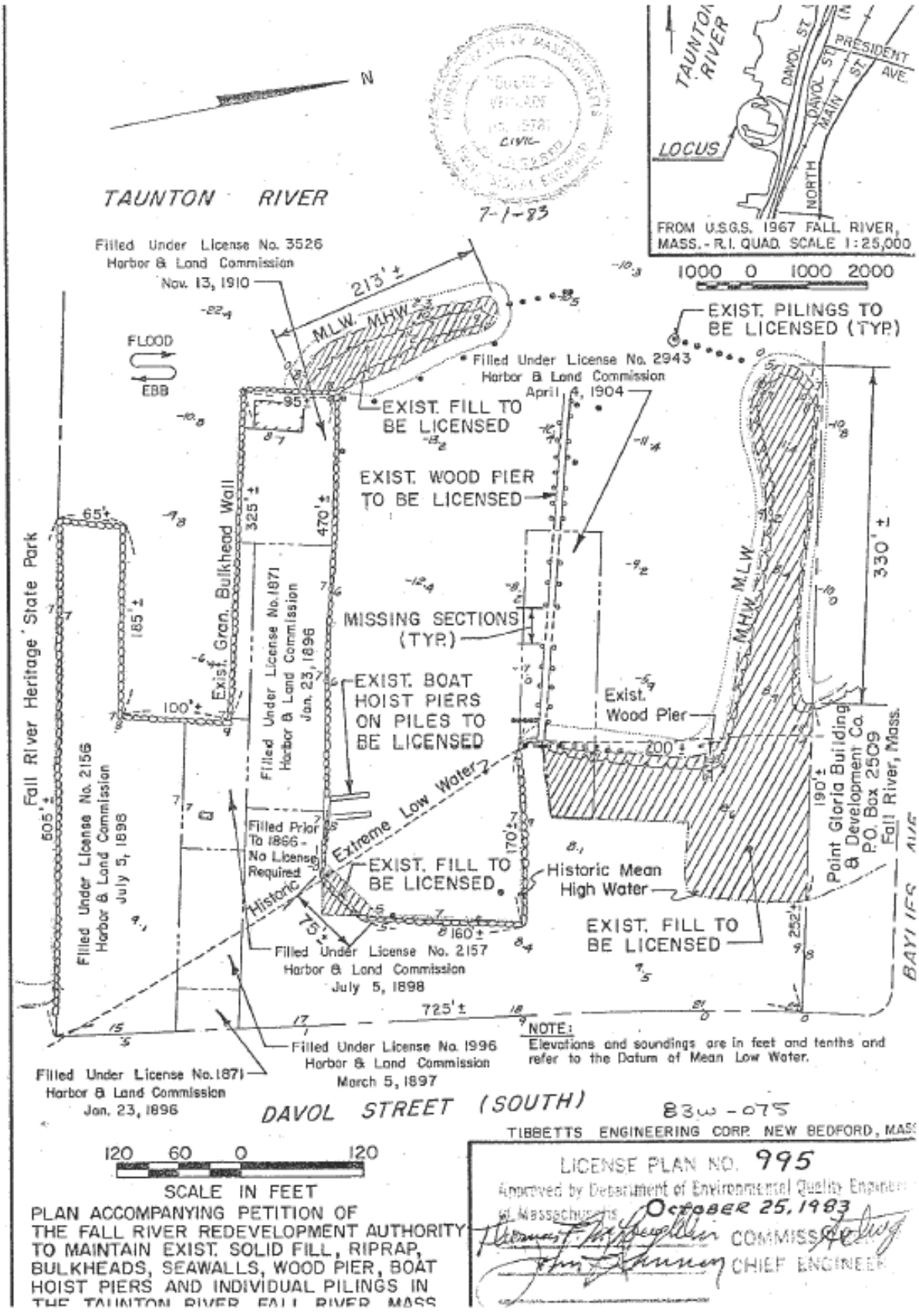
DEP License No. 2157
dated: July 5, 1898



DEP License No. 2943
dated: April 11, 1905



DEP License No. 3526
dated: November 30, 1910



DEP License No. 995
dated: October 25, 1983

Appendix E
Long-term Cap Monitoring Plan

Long-Term Cap Monitoring Plan
City Pier, Fall River, Massachusetts

Background

The fate and transport characteristics of the contaminants of concern [polychlorinated biphenyls (PCBs)] have been evaluated and the following apply:

- PCBs are relatively insoluble in water;
- Direct contact, adsorption and/or ingestion are the only significant pathway for human exposure.

Therefore, by installing engineered barriers and eliminating direct exposure to contaminated media, the risk to human health and the environment can be substantially eliminated.

The engineered barriers must be maintained in accordance with the following monitoring plan, to keep the contaminated fill layer isolated from human and environmental receptors:

1) The majority of the cap area is asphalt or concrete paved. Asphalt has been placed at a minimum thickness of six inches on top of at least 18-inches of imported crushed stone sub-base underlain by a geotextile fabric. The concrete sidewalks have a minimum thickness of six inches, on top of 18-inches of imported clean crushed sub-base, gravel and geotextile fabric.

2) Small portions of the cap will be landscaped. All landscaped areas have been constructed by removing site soil to a minimum depth of 3 feet below final grade, placing a geotextile fabric to demarcate the limits of excavation and to separate residual PCB-impacted soil from clean fill, backfilling with a 6 to 12-inch base of imported clean crushed stone, placing an orange polyethylene mesh warning barrier, followed by imported clean sandy gravel and topsoil to achieve finished grade.

3) The marina operations building with the base of the concrete floor of the building at grade. The floor consists of a minimum of six inches of poured-in-place reinforced concrete on top of 18-inches of imported clean crushed sub-base, gravel and geotextile fabric.

In combination, the purpose of these barriers is to prevent human exposure and erosion, and represent the cap for the marina facility in accordance with the requirements of 40 CFR 761.61(a)(7).

Cap Maintenance

The following activities are required to maintain the integrity of the cap. In the event that activities prohibited in this section must be undertaken, a Massachusetts Licensed Site Professional must be involved to direct and oversee the activities.

A. Maintain all asphalt pavement, concrete pavement, and sidewalks such that the integrity of each is not compromised.

    1) If replacement of asphalt surfaces, concrete pavements and/or sidewalks is required, it shall be limited to the material to be replaced such that the underlying soil is not significantly disturbed (six inches deep or less below bottom of surface being removed) and the surface material is immediately (within 72 hours) repaired or replaced with a comparable barrier.

    2) No excavation shall be performed to a depth greater than two feet beneath paved areas.

B. Maintain all landscaped areas such that soil erosion or other exposure of contaminated fill is prevented. This shall include a prohibition against any of the following activities, except as provided for above:

    1. If vegetation is to be planted or removed, excavation and/or removal of existing root systems shall not extend beyond one foot below existing grade.
    2) Prohibition against any excavation to a depth greater than two feet in landscaped areas.

    3) Prohibition against any activities that result, or could result, in the erosion of soil in any unpaved area.

    4) Prohibition against planting any deep-rooted vegetation (i.e., with roots typically extending greater than three feet below grade).

    5) Any removal of overburden soil that reduces the depth of clean fill over the residual PCB-impacted soil to less than three feet.

C. Maintain all interior building floors such that the integrity of each is not compromised. This shall include a prohibition against:

    1) Removal of building floor slab such that soil is exposed or groundwater is allowed to enter building without prior development of a Soil Management Plan and a Health and Safety Plan prepared and implemented in accordance with descriptions below.

2) Any excavation beneath building floors without prior development of a Soil Management Plan and a Health and Safety Plan prepared and implemented in accordance with descriptions below.

3) Activities that result, or could result, in compromising the structural integrity of building floors, asphalt pavement, or concrete pavement.

Cap Inspections

Perform semi-annual inspections and associated record keeping activities to confirm that the cap is being properly maintained to prevent exposure. Particular attention is drawn to the following best management practices:

- Any damage to the cap, whatever the cause, must be repaired immediately to substantially restore the cap to its original design condition.
- Performance of frequent and short watering of landscape vegetation to encourage shallow root growth is recommended.
- Any deep-rooted indigenous species identified during routine inspections shall be immediately removed.

Deed Restriction

The above requirements will be recorded on the property in a Notice of Activity and Use Limitation (AUL) at the Bristol County Registry of Deeds. The AUL will be prepared and filed within 60 days of completion of cleanup activity, as required in 40 CFR 761.61(8)(i), in accordance with the requirements of the Massachusetts Contingency Plan 310 CMR 40.0000. The AUL will be maintained, and the Cap Monitoring Plan will continue to be implemented, in perpetuity, or until such time as additional response actions allow the modification or removal of the AUL and Cap Monitoring Plan in accordance with all applicable laws and regulations in force at the time.

Soil Management Plan

A Soil Management Plan must be prepared by a Massachusetts Licensed Site Professional (LSP) and implemented prior to the commencement of any activity which is likely to disturb contaminated soil, the top of which is located at two to four feet below surface grade within the AUL area. The Soil Management Plan should describe appropriate soil excavation, handling, storage, transport, and disposal procedures and include a description of the engineering controls and air monitoring procedures necessary to ensure that workers and receptors in the vicinity are not affected by fugitive dust or particles. On-Site workers must be informed of the requirements of the soil management plan, and the Plan must be available on-site throughout the course of the project.

Health and Safety Plan

A Health and Safety Plan must be prepared by a certified Industrial Hygienist or other qualified individual sufficiently trained in worker health and safety requirements and implemented prior to the commencement of any activity which is likely to disturb contaminated soil, the top of

which is located at two to four feet below surface grade within the AUL area. The Health and Safety Plan should specify the type of personal protection (i.e., clothing, respirators), engineering controls, and environmental monitoring (if any) necessary to prevent worker exposures to contaminated soil through dermal contact, ingestion, and/or inhalation. Workers must be informed of the requirements of the Health and Safety Plan, and the plan must be available on-site throughout the course of the project.

Cap Monitoring Log Sheet

Inspection Date: _____ Inspection By: _____

Use this inspection form to document quarterly inspections. If unacceptable conditions are observed, complete form again immediately after repairs are completed.

A. Asphalt Surfaces - observe asphalt for cracking, holes, asphalt removed during construction, other damage.

All asphalt surfaces acceptable? ☐ **YES** ☐ **NO**

If no, describe unacceptable asphalt:

Location _____

Condition _____

_____

_____

Describe any repairs to asphalt conducted since previous inspection: _____

_____

_____

All repairs adequate? ☐ **YES** ☐ **NO**

B. Concrete Surfaces - observe concrete for cracking, holes, concrete removed during construction, other damage.

All concrete surfaces acceptable? ☐ **YES** ☐ **NO**

If no, describe unacceptable concrete:

Location _____

Condition _____

_____

_____

Describe any repairs to concrete conducted since previous inspection: _____

_____

_____

All repairs adequate? ☐ **YES** ☐ **NO**

Cap Monitoring Log Sheet

C. Landscaping - observe landscaping for erosion, animal holes, excavation, vegetation health.

All landscaped areas acceptable? ☐ **YES** ☐ **NO**

If no, describe unacceptable conditions:

Location _____

Condition _____

_____

_____

Describe any repairs to landscaping conducted since previous inspection: _____

_____

_____

All repairs adequate? ☐ **YES** ☐ **NO**

Appendix F
Draft Activity and Use Limitation

Form 1075

NOTICE OF ACTIVITY AND USE LIMITATION
M.G.L. c. 21E, § 6 and 310 CMR 40.0000

Disposal Site Name: City Pier – Davol Street
DEP Release Tracking No.(s): 4-17012

This Notice of Activity and Use Limitation ("Notice") is made as of this ____ day of _____, 2011, by the Fall River Redevelopment Authority, One Government Center, Fall River, Massachusetts, together with his/her/its/their successors and assigns (collectively "Owner").

W I T N E S S E T H:

WHEREAS, the Fall River Redevelopment Authority, is the owner(s) in fee simple of that certain parcel(s) of land located in Fall River, Bristol County, Massachusetts with the buildings and improvements thereon, pursuant to a deed recorded with the Fall River District Registry of Deeds in Book 1404, Page 227;

WHEREAS, said parcel(s) of land, which is more particularly bounded and described in Exhibit A, attached hereto and made a part hereof ("Property") is subject to this Notice of Activity and Use Limitation. The Property is shown on a plan recorded in the Fall River District Registry of Deeds in Plan Book ___, Plan Page ____;

WHEREAS, a portion of the Property ("Portion of the Property") is subject to this Notice of Activity and Use Limitation. The Portion of the Property is more particularly bounded and described in Exhibit A-1 referenced as “AUL AREA”, attached hereto and made a part hereof. The Portion of the Property is shown on a plan recorded in the Fall River District Registry of Deeds in Plan Book ____, Plan Page ___;

WHEREAS, the Portion of the Property comprises part of a disposal site as the result of a release of oil and/or hazardous material. Exhibit B is a sketch plan showing the relationship of the Portion of the Property subject to this Notice of Activity and Use Limitation to the boundaries of said disposal site existing within the limits of the Property and to the extent such boundaries have been established. Exhibit B is attached hereto and made a part hereof; and

WHEREAS, one or more response actions have been selected for the Portion of the Disposal Site in accordance with M.G.L. c. 21E ("Chapter 21E") and the Massachusetts Contingency Plan, 310 CMR 40.0000 ("MCP"). Said response actions are based upon (a) the

restriction of human access to and contact with oil and/or hazardous material in soil and/or (b) the restriction of certain activities occurring in, on, through, over or under the Portion of the Property. The basis for such restrictions is set forth in an Activity and Use Limitation Opinion ("AUL Opinion"), dated _____, 2011, (which is attached hereto as Exhibit C and made a part hereof);

NOW, THEREFORE, notice is hereby given that the activity and use limitations set forth in said AUL Opinion are as follows:

1. Activities and Uses Consistent with the AUL Opinion. The AUL Opinion provides that a condition of No Significant Risk to health, safety, public welfare or the environment exists for any foreseeable period of time (pursuant to 310 CMR 40.0000) so long as any of the following activities and uses occur on the Portion of the Property for AUL AREA:

(i) Use for a marina facility, including offices, pedestrian and/or vehicle traffic, vehicle parking, vehicle maintenance, equipment storage and maintenance;

(ii) Ongoing use of all existing facilities and associated landscaping, parking lots, and sidewalks;

(iii) Occupancy by employees and visitors for all typical and routine marina-related activities;

(iv) Maintenance of landscaped areas and lawns, including filling of burrowing animal holes and placement, maintenance and/or removal of mulch or other surface enhancement or erosion control materials within the top two feet of the permeable soil cap;

(v) Interior or exterior building maintenance that does not impact the soil cap and/or the underlying soil;

(vi) Planting or removal within the landscaped areas of ornamental vegetation such as grass, shallow-rooted shrubs, flowers, groundcover, etc. Such ornamental vegetation shall be selected from those species that are known to have shallow root systems that would not be expected under normal conditions to cause roots to penetrate the black geotextile fabric barrier located at three feet below grade in the landscaped areas. No excavation for planting or removal of vegetation in the landscaped areas shall extend beyond the orange warning barrier placed at approximately two feet below grade, except as specifically provided for herein;

(vii) Maintenance, including replacement, of exterior surface materials such as asphalt paving, concrete paving, or sidewalks, such that removal of such surfaces is limited to the material to be replaced and the underlying soil is not significantly disturbed (one foot less below the bottom of the surface being removed) and where the surface material is repaired or replaced with a comparable barrier;

(viii) Installation of concrete or asphalt pavement over currently landscaped

areas, including subgrade materials, with installed depth limited to less than two feet below existing grade;

(ix) Erection or placement of temporary structures that do not require soil excavation. Where stakes are required to stabilize a temporary structure, such stakes shall not be driven more than two feet into the ground;

(x) Any other public, commercial, or industrial activities and uses that do not cause and/or result in the direct contact with, disturbance of, and/or relocation of the contaminated soil, the top of which is currently located at an approximate depth of three feet below surface grade; and

Such other activities or uses which, in the Opinion of an LSP, shall present no greater risk of harm to health, safety, public welfare or the environment than the activities and uses set forth in this Paragraph.

2. Activities and Uses Inconsistent with the AUL Opinion. Activities and uses which are inconsistent with the objectives of this Notice of Activity and Use Limitation, and which, if implemented at the Portion of the Property designated as AUL AREA, may result in a significant risk of harm to health, safety, public welfare or the environment or in a substantial hazard, are as follows:

(i) Activities that result, or could result, in compromising the structural integrity of asphalt pavement or concrete bounds that delineate the limits of the subject AUL AREA;

(ii) Activities that result, or could result, in the erosion of soil in any unpaved areas;

(iii) Removal of any soil from landscaped areas without immediate replacement with clean soil, or other suitable impermeable or permeable cap material, to maintain existing grade;

(iv) Planting of food crops for human or animal consumption;

(v) Excavation to a depth greater than two feet in paved and landscaped areas, or penetration of the warning barrier, whichever is encountered first, without prior development of a Soil Management Plan and a Health and Safety Plan under the supervision of an LSP; and

(vi) Any other public, commercial, or industrial activities or uses that result in the direct contact with, disturbance of, and/or relocation of the contaminated soil, the top of which is currently located at a depth of approximately three feet below surface grade.

3. Obligations and Conditions Set Forth in the AUL Opinion. If applicable, obligations and/or conditions to be undertaken and/or maintained at the Portion of the Property to maintain a condition of No Significant Risk as set forth in the AUL Opinion shall include the following for AUL AREA:

(i) Maintain all asphalt pavement, concrete pavement, and sidewalks such that the integrity of all impervious surfaces is not compromised;

(ii) Maintain all landscaped areas such that soil erosion is prevented;

(iii) Perform annual inspections and associated record keeping activities to confirm that the pavement, foundation and landscaping are being properly maintained to prevent any damage to the soil cap;

(iv) A Soil Management Plan must be prepared by an LSP and implemented prior to the commencement of any activity, which is likely to disturb contaminated soil, the top of which is located approximately three feet below surface grade. The Soil Management Plan should describe appropriate soil excavation, handling, storage, transport, and disposal procedures and include a description of the engineering controls and air monitoring procedures necessary to adequately protect workers and potential receptors in the vicinity from fugitive dust and airborne particulates. On-Site workers must be informed of the requirements of the Soil Management Plan, and the Plan must be available on-site throughout the course of such activities;

(v) A Health and Safety Plan must be prepared by a certified Industrial Hygienist, LSP or other qualified individual sufficiently trained in worker health and safety requirements and implemented prior to the commencement of any activity that is likely to disturb contaminated soil located below the soil cap. The Health and Safety Plan must specify necessary personal protection (i.e., clothing, respirators), engineering controls and environmental monitoring necessary to prevent worker exposures to contaminated soil through dermal contact, ingestion, and/or inhalation. Workers must be informed of the requirements of the Health and Safety Plan, and the Plan must be available on-site throughout the course of such activities; and

(vi) The contaminated soil, currently located approximately three feet below surface grade, must remain at depth and may not be relocated, unless such activity is first appropriately evaluated by an LSP who renders an Opinion that performance of such relocation is consistent with maintaining a condition of No Significant Risk.

4. Proposed Changes in Activities and Uses. Any proposed changes in activities and uses at the Portion of the Property which may result in higher levels of exposure to oil and/or hazardous material than currently exist shall be evaluated by an LSP who shall render an Opinion, in accordance with 310 CMR 40.1080 *et seq*., as to whether the proposed changes will present a significant risk of harm to health, safety, public welfare or the environment. Any and all requirements set forth in the Opinion to meet the objective of this Notice shall be satisfied before any such activity or use is commenced.

5. Violation of a Response Action Outcome. The activities, uses and/or exposures upon which this Notice is based shall not change at any time to cause a significant risk of harm to health, safety, public welfare, or the environment or to create substantial hazards due to exposure to oil and/or hazardous material without the prior evaluation by an LSP in accordance with 310 CMR 40.1080 *et seq*., and without additional response actions, if necessary, to achieve or maintain a condition of No Significant Risk or to eliminate substantial hazards.

If the activities, uses, and/or exposures upon which this Notice is based change without the prior evaluation and additional response actions determined to be necessary by an LSP in accordance with 310 CMR 40.1080 *et seq*., the owner or operator of the Portion of the Property subject to this Notice at the time that the activities, uses and/or exposures change, shall comply with the requirements set forth in 310 CMR 40.0020.

6. Incorporation Into Deeds, Mortgages, Leases, and Instruments of Transfer. This Notice shall be incorporated either in full or by reference into all future deeds, easements, mortgages, leases, licenses, occupancy agreements or any other instrument of transfer, whereby an interest in and/or a right to use the Property or a portion thereof is conveyed.

Owner hereby authorizes and consents to the filing and recordation and/or registration of this Notice, said Notice to become effective when executed under seal by the undersigned LSP, and recorded and/or registered with the appropriate Registry(ies) of Deeds and/or Land Registration Office(s).

WITNESS the execution hereof under seal this _____ day of _____ 2011.

Fall River Redevelopment Authority

By: _____
(Typed Name)

By: _____
(Typed Name)

By: _____
(Typed Name

By: _____
(Typed Name)

By: _____
(Typed Name)

Approved As to Form

By: _____
Town Counsel

COMMONWEALTH OF MASSACHUSETTS

_____, ss _____, 2011

On this ____ day of _____, 2011, before me, the undersigned notary public, personally appeared _____, _____ of the Fall River Redevelopment Authority, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that she signed it voluntarily for its stated purpose.

_____ (official signature and seal of notary)

My commission expires _____

The undersigned LSP hereby certifies that he executed the aforesaid Activity and Use Limitation Opinion attached hereto as Exhibit C and made a part hereof and that in his Opinion this Notice of Activity and Use Limitation is consistent with the terms set forth in said Activity and Use Limitation Opinion.

Date: _____ _____

Joseph R. McLoughlin II, LSP

COMMONWEALTH OF MASSACHUSETTS

_____, ss _____, 2011

On this ____ day of _____, 2011, before me, the undersigned notary public, personally appeared __Joseph R. McLoughlin II__, proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose.

_____ (official signature and seal of notary)

My commission expires _____

Upon recording, return to:

Fall River Redevelopment Authority.
One Government Center
Fall River, Massachusetts 02722

City Pier – Davol Street
Activity and Use Limitation (AUL)

Exhibits

Exhibit A – Metes and Bounds of Property

Exhibit A-1 – Metes and Bounds of AUL Area

Exhibit B – Site Sketch Plan

Exhibit C – Activity and Use Limitation Opinion

Exhibit D – Activity and Use Limitation Opinion Transmittal Form

Exhibit A

Metes and Bounds of Property

LEGAL DESCRIPTION
PARCEL 0-22-0012
FALL RIVER, MASSACHUSETTS

Beginning at a point in the southeasterly corner of the parcel herein described at the westerly side of Davol Street;

THENCE: running northerly along Davol Street 116 feet to a corner;

THENCE: running westerly 304.9 feet to the Taunton River;

THENCE: running southerly 53.5 feet along the Taunton River to a corner;

THENCE: running westerly 184.3 feet along the Taunton River;

THENCE: running southerly 64.4 feet along the Taunton River;

THENCE: running easterly 502.2 feet along the Taunton River, to the point of beginning.

Said parcel contains 2.45 acres according to the hereinafter mentioned plan.

Said Parcel is shown on a plan entitled "_____," dated _____ by the Fall River Redevelopment Authority.

Said plan is recorded at the Fall River District Registry of Deeds in Plan Book ___, Plan Page ___.

EXHIBIT C - Activity and Use Limitation Opinion

In accordance with the requirements of 310 CMR 40.1074, this Activity and Use Limitation Opinion has been prepared for a Portion of the Property owned by the Fall River Redevelopment Authority (FRRA), located at City Pier, Davol Street Fall River, Massachusetts, Bristol County (the "Property"). As of the date of this Activity and Use Limitation Opinion, the Property is the location of the City Pier Marina.

Site History

According to historical Sanborn maps, the Site was occupied by Cook Borden & Co. between 1888 and 1950 for use as a lumber yard with milling operations. Lumber yard operations were ceased between 1950 and 1976, and all associated buildings were removed. After 1976, the Site was used for boat storage and as a marina.

Around the early 1900s, the Fall River Gas Company was located east of the Site property, between Davol Street and the railroad tracks. A gas holder was located near the southeast corner of the Site. Also in the early 1900s, the area south of the Site was used as a coal yard. According to sources in the Fall River community, a restaurant opened at the southern end of the Site in the early 1980's. The FRRA acquired the property in 1982. According to available resources, the Site more recently has been used for occasional boat storage, repairs, and river access. The Site was under lease by the FRRA to J. Cashman, Inc. until September 2005 for the storage of construction equipment, and also for use as an access point to perform bridge construction work along the Taunton River. Currently the Site is vacant, with a locked fence to restrict access.

The contamination is believed to have originated from impacted fill material that was placed on-Site during the initial development of the property. The original source of the filled material was not documented and is unknown. The former transformer building on the Site is not thought to be the source for the PCB contamination in the soil, groundwater, or Taunton River sediment due to the fact that the existence of the structure could not be confirmed through available information. Soil contamination was located at the Site at depths between 0 and 8 feet below ground surface. Depth to groundwater is approximately 2 feet below grade.

Reason for Activity and Use Limitation

BETA has performed a risk characterization to evaluate the risk posed by the future use of the Property as a marina facility. The risk characterization concluded that the Property poses No Significant Risk to health, safety, public welfare, or the environment under current conditions in which exposure to the soil at a portion of the Property is prevented. However, a Significant Risk would exist without such exposure restriction. In order to restrict such exposures and maintain a condition of No Significant Risk, an Activity and Use Limitation is required to maintain an engineered barrier and to restrict certain activities and uses of a portion of the Property.

Barriers to Exposure

After delineation of the PCB-impacted soils at concentrations greater than 1 mg/kg, partial excavation (and both on-site and off-site management) of the contaminated soil was completed prior to construction of a permeable cap to the appropriate grades. This area is designated as AUL AREA on Exhibit B. The surface of the cap was finished with a combination of asphalt pavement and landscaping. In non-landscaped areas (i.e. driveways, parking areas, etc.), the cap included a geotextile soil separator placed above the residual PCB-impacted soil and a minimum two-foot thick layer of clean sandy gravel and processed stone was placed; an orange mesh warning barrier was installed one foot above the geotextile fabric within the two-foot thick sandy gravel layer. In landscaped areas, geotextile fabric was placed on the residual PCB-impacted soil and backfilled with a minimum depth of three feet of sandy gravel, processed stone and loam. An orange mesh warning barrier was installed approximately one foot above the geotextile fabric within the three-foot thick permeable soil cap.

Activities and Uses Consistent with the AUL Opinion

(i) Use for a marina facility, including offices, pedestrian and/or vehicle traffic, vehicle parking, vehicle maintenance, equipment storage and maintenance;

(ii) Ongoing use of all existing facilities and associated landscaping, parking lots, and sidewalks;

(iii) Occupancy by employees and visitors for all typical and routine marina-related activities;

(iv) Maintenance of landscaped areas and lawns, including filling of burrowing animal holes and placement, maintenance and/or removal of mulch or other surface enhancement or erosion control materials within the top two feet of the permeable soil cap;

(v) Interior or exterior building maintenance that does not impact the soil cap and/or the underlying soil;

(vi) Planting or removal within the landscaped areas of ornamental vegetation such as grass, shallow-rooted shrubs, flowers, groundcover, etc. Such ornamental vegetation shall be selected from those species that are known to have shallow root systems that would not be expected under normal conditions to cause roots to penetrate the black geotextile fabric barrier located at three feet below grade in the landscaped areas. No excavation for planting or removal of vegetation in the landscaped areas shall extend beyond the orange warning barrier placed at approximately two feet below grade, except as specifically provided for herein;

(vii) Maintenance, including replacement, of exterior surface materials such as asphalt paving, concrete paving, or sidewalks, such that removal of such surfaces is limited to the material to be replaced and the underlying soil is not significantly disturbed (one foot deep or less below the bottom of the surface being removed) and where the surface material is repaired or replaced with a comparable barrier;

(viii) Installation of concrete or asphalt pavement over current landscaped areas, including subgrade materials, with installed depth limited to less than two feet below existing grade;

(ix) Erection or placement of temporary structures that do not require soil excavation. Where stakes are required to stabilize a temporary structure, such stakes shall not be driven more than two feet into the ground;

(x) Any other public, commercial, or industrial activities and uses that do not cause and/or result in the direct contact with, disturbance of, and/or relocation of the contaminated soil, the top of which is currently located at an approximate depth of three feet below surface grade; and

(xi) Such other activities or uses which, in the Opinion of an LSP, shall present no greater risk of harm to health, safety, public welfare or the environment than the activities and uses set forth in this Paragraph.

Activities and Uses Inconsistent with the AUL Opinion

(i) Activities that result, or could result, in compromising the structural integrity of asphalt pavement or concrete bounds that delineate the limits of the subject AUL AREA;

(ii) Activities that result, or could result, in the erosion of soil in any unpaved areas;

(iii) Removal of any soil from landscaped areas without immediate replacement with clean soil, or other suitable impermeable or permeable cap material, to maintain existing grade;

(iv) Planting of food crops for human or animal consumption;

(v) Excavation to a depth greater than two feet in paved and landscaped areas, or penetration of the warning barrier, whichever is encountered first, without prior development of a Soil Management Plan and a Health and Safety Plan under the supervision of an LSP; and

(vi) Any other public, commercial, or industrial activities or uses that result in the direct contact with, disturbance of, and/or relocation of the contaminated soil, the top of which is currently located at an approximate depth of three feet below surface grade.

Obligations and Conditions Set Forth in the AUL Opinion

(i) Maintain all asphalt pavement, concrete pavement, and sidewalks such that the integrity of all impervious surface is not compromised;

(ii) Maintain all landscaped areas such that soil erosion is prevented;

(iii) Perform annual inspections and associated record keeping activities to confirm that the pavement, foundation and landscaping are being properly maintained to prevent any damage to the soil cap;

(iv) A Soil Management Plan must be prepared by an LSP and implemented prior to the commencement of any activity, which is likely to disturb contaminated soil, the top of which is located approximately three feet below surface grade. The Soil Management Plan should describe appropriate soil excavation, handling, storage, transport, and disposal procedures and include a description of the engineering controls and air monitoring procedures necessary to adequately protect workers and potential receptors in the vicinity from fugitive dust and airborne particulates. On-Site workers must be informed of the requirements of the Soil Management Plan, and the Plan must be available on-site throughout the course of such activities;

(v) A Health and Safety Plan must be prepared by a certified Industrial Hygienist, LSP or other qualified individual sufficiently trained in worker health and safety requirements and implemented prior to the commencement of any activity that is likely to disturb contaminated soil located below the soil cap. The Health and Safety Plan must specify necessary personal protection (i.e., clothing, respirators), engineering controls and environmental monitoring necessary to prevent worker exposures to contaminated soil through dermal contact, ingestion, and/or inhalation. Workers must be informed of the requirements of the Health and Safety Plan, and the Plan must be available on-site throughout the course of such activities; and

(vi) The contaminated soil, currently located approximately three feet below surface grade, must remain at depth and may not be relocated, unless such activity is first appropriately evaluated by an LSP who renders an Opinion that performance of such relocation is consistent with maintaining a condition of No Significant Risk.

LSP: _____

Date: _____

BETA Group, Inc.
Engineers • Scientists • Planners

6 Blackstone Valley Place
Lincoln, RI 02865
(401) 333-2382, fax (401) 333-9225
www.BETA-Inc.com

October 27, 2011

Mayor William A. Flanagan
City of Fall River
One Government Center, Room 619
Fall River, Massachusetts 02722

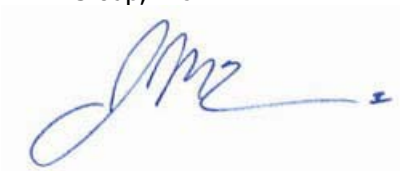
RE: City Pier
Davol Street, Fall River, Massachusetts
Release Tracking Number: 4-17-12

Dear Mayor Flanagan:

The purpose of this letter is to inform you, pursuant to 310 CMR 40.1403(d), of the implementation of a Release Abatement Measure (RAM) for the release of polychlorinated biphenyls (PCBs) to soils at the above-referenced property (the Site). The purpose of the RAM is to remove PCB-impacted soils (greater than 100 ppm) from the Site, to consolidate soils with PCBs greater than 1 ppm, to construct cap over PCB-contaminated soils to remain at the Site, and to implement an Activity and Use Limitation on the Site. The RAM will begin in November 2011 and will likely conclude in June 2012.

The RAM Plan and supporting documents, submitted in accordance with 310 CMR 40.0000 et seq. of the Massachusetts Contingency Plan, are available for your review at the MassDEP Southeast Regional Office in Lakeville, Massachusetts. A copy of the report and supporting documentation may be obtained at the MassDEP, or from BETA. If you have any questions regarding this correspondence, please call Joe McLoughlin at (401) 333-2382.

Sincerely,
BETA Group, Inc.



Joseph R. McLoughlin II, LEP, LSP
Senior Project Manager

cc: City of Fall River Health and Human Services
Massachusetts DEP/BWSC - Southeast Regional Office

BETA Group, Inc.
Engineers • Scientists • Planners

6 Blackstone Valley Place
Lincoln, RI 02865
(401) 333-2382, fax (401) 333-9225
www.BETA-Inc.com

October 27, 2011

Health and Human Services
City of Fall River
One Government Center, Room 643
Fall River, Massachusetts 02722

RE: City Pier
Davol Street, Fall River, Massachusetts
Release Tracking Number: 4-17-12

To Whom It May Concern:

The purpose of this letter is to inform you, pursuant to 310 CMR 40.1403(d), of the implementation of a Release Abatement Measure (RAM) for the release of polychlorinated biphenyls (PCBs) to soils at the above-referenced property (the Site). The purpose of the RAM is to remove PCB-impacted soils (greater than 100 ppm) from the Site, to consolidate soils with PCBs greater than 1 ppm, to construct cap over PCB-contaminated soils to remain at the Site, and to implement an Activity and Use Limitation on the Site. The RAM will begin in November 2011 and will likely conclude in June 2012.

The RAM Plan and supporting documents, submitted in accordance with 310 CMR 40.0000 et seq. of the Massachusetts Contingency Plan, are available for your review at the MassDEP Southeast Regional Office in Lakeville, Massachusetts. A copy of the report and supporting documentation may be obtained at the MassDEP, or from BETA. If you have any questions regarding this correspondence, please call Joe McLoughlin at (401) 333-2382.

Sincerely,
BETA Group, Inc.

Joseph R. McLoughlin II, LEP, LSP
Senior Project Manager

cc: City of Fall River Mayor's Office
Massachusetts DEP/BWSC – Southeast Regional Office

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

OCT 24 2011

Fall River Redevelopment Authority
Attn: Kenneth Fiola, Jr., Executive Director
One Government Center
Fall River, Massachusetts 02722

Re: PCB Risk-Based Cleanup and Disposal Approval under 40 CFR § 761.61(c)
City of Fall River City Pier
Fall River, Massachusetts
MassDEP RTN: 4-17012

Dear Mr. Fiola:

This is in response to the Notification [1] by the Fall River Redevelopment Authority (FRRA) for approval of a PCB risk-based cleanup and disposal plan under § 761.61(c) to address PCB-contaminated soils at the property known as City Pier and located on Davol Street, Fall River, Massachusetts (the Site). The Site contains PCB-contaminated soils that exceed the allowable PCB level for unrestricted use under the federal PCB regulations at 40 CFR § 761.61(a).

FRRA's proposed plan includes the following major activities:

- Excavate and dispose of soil with PCB concentrations greater than (>) 100 parts per million (ppm) at a TSCA-permitted or RCRA hazardous waste landfill;

- Excavate and consolidate on-site PCB-contaminated soils with PCB concentrations > 1 ppm but less than or equal to ($\leq$ 100 ppm. Soils will be placed beneath an engineered barrier (i.e., cap) over an approximately 83,000 square foot area in the central portion of the Site. Any excess soils that will not fit beneath the cap will be disposed of off-site; and,

---

1 Information was submitted by BETA Group, Inc. on behalf of FRRA to support a risk-based cleanup and disposal approach for PCB remediation waste under 40 CFR § 761.61(c). Information was provided dated July 15, 2011 (Risk-Based Cleanup Plan); September 1, 2011 (Response to EPA Comments via e-mail on September 15, 2011); October 5, 2011 (Historical Data and Response to EPA Comments via e-mail); and, October 12, 2011 (duplicate report results). These submissions will be referred to as the "Notification."

- Place an Activity and Use Limitation (AUL) on the capped portion of the Site to require maintenance of the engineered control and to detail necessary actions if future excavation activities are planned within the cap area.

The information provided meets the notification requirements under § 761.61(c) and § 761.61(a)(3). Given the sampling that has been conducted to-date and the additional sampling that will be conducted during soil excavation, it appears that the PCB-contaminated soils will be adequately defined for purposes of either off-site disposal or on-site disposal. For the consolidation area, FRRA is proposing to meet a PCB cleanup standard of 100 ppm with a compliant cap which EPA has determined to be appropriate for a *low occupancy area* cleanup under § 761.61(a). The proposed consolidation of the > 1 ppm but ≤100 ppm PCB-contaminated soils beneath a compliant cap should reduce the overall PCB risk at the Site and also limit the size of the required cap.

In areas located outside the consolidation/cap area, PCB-contaminated soils will be removed to achieve a PCB cleanup standard of less than (<) 1 ppm in the top 1-foot of soil at a minimum. In deeper soils where PCB concentrations have been identified at > 1 ppm, these soils also will be removed. In addition, clean fill and/or other surface covers such as pavement, will be placed in some areas.

EPA finds that the proposed plan will not create an unreasonable risk of injury to public health or the environment based on the proposed reuse of the Site as a marina and as a boat launch to the Taunton River. FRRA may proceed with its project in accordance with 40 CFR § 761.61(c); its Notification; and, this Approval, subject to the conditions of Attachment 1. EPA may revoke, suspend, and/or modify this Approval upon finding that this risk-based cleanup and disposal action may pose an unreasonable risk of injury to health or the environment due to a change in Site use.

Please be aware that this Risk-Based Approval is based on the use of the Site as a marina and for a boat launch to provide river access. These uses would not require disturbance of deeper subsurface soils (i.e. greater than 1-foot below ground surface) in the areas located outside the consolidation/cap area. Given the past filling and historic Site uses, there is potential that PCBs at > 1 ppm may be present in deeper soils outside the consolidation/cap area, which have not been characterized. In the event that future Site activities differ from those currently planned, and/or that result in disturbance of these deeper soils, sampling should be conducted to determine if any additional cleanup and/or additional measures are necessary to support the proposed activities, which could include a change in Site use (see Attachment 1, Condition 19). This requirement may not be necessary if the deeper soils outside the consolidation/cap area are more fully characterized and, if necessary appropriately remediated, during the excavation and consolidation of the PCB-contaminated soils.

This Approval does not release FRRA from any applicable requirements of federal, state or local law, including the requirements related to cleanup and disposal of PCBs or other contaminants under the Massachusetts Department of Environmental Protection (MassDEP) regulations.

This Approval may be revoked, suspended and/or modified as described in Attachment 1 if the EPA determines that implementation of this Approval may present an unreasonable risk of injury to health or the environment. Nothing in this Approval is intended or is to be construed to prejudice any right or remedy concerning PCBs or other federally-regulated contaminants at the Site otherwise available to the EPA under Section 6 of TSCA, 15 U.S.C. 2605, 40 CFR Part 761, or other provisions of federal law.

Questions and correspondence regarding this Approval should be directed to:

Kimberly N. Tisa, PCB Coordinator
United States Environmental Protection Agency
5 Post Office Square, Suite 100
Mail Code: OSRR07-2
Boston, Massachusetts 02109-3912
Telephone: (617) 918-1527
Facsimile: (617) 918-0527

EPA shall consider this project complete only when it has received documents evidencing construction of the cap and recording of the deed restriction (i.e., AUL). Should you have any questions on this matter, please contact Kimberly Tisa at (617) 918-1527.

Sincerely,

FOR JTO

James T. Owens III, Director
Office of Site Remediation & Restoration

Attachment 1

cc: J. McLoughlin, BETA
G.Martin, MassDEP
File

ATTACHMENT 1:

PCB RISK-BASED CLEANUP AND DISPOSAL APPROVAL CONDITIONS
CITY OF FALL RIVER CITY PIER
DAVOL STREET
FALL RIVER, MASSACHUSETTS

GENERAL CONDITIONS

1. This Approval is granted under the authority of Section 6(e) of the Toxic Substances Control Act (TSCA), 15 U.S.C. § 2605(e), and the PCB regulations at 40 CFR Part 761, and applies solely to *PCB remediation waste* identified in the Notification[2] and located at the Site.

   a. In the event that the Fall River Redevelopment Authority (FRRA) identifies other PCB-contaminated wastes subject to cleanup and disposal under the PCB regulations, FRRA will be required to notify EPA and to clean up the PCB-contaminated wastes in accordance with 40 CFR Part 761.

   b. FRRA may submit a separate plan to address the PCB contamination or may modify the Notification to incorporate cleanup of the PCBs under this Approval in accordance with Condition 19.

2. FRRA shall conduct on-site activities in accordance with the conditions of this Approval and with the Notification.

3. In the event that the activities described in the Notification differ from the conditions specified in this Approval, the conditions of this Approval shall govern.

4. The terms and abbreviations used herein shall have the meanings as defined in 40 CFR § 761.3 unless otherwise defined within this Approval.

5. FRRA must comply with all applicable federal, state and local regulations in the storage, handling, and disposal of all PCB wastes, including PCBs, PCB Items and decontamination wastes generated under this Approval. In the event of a new spill during response actions, FRRA shall contact EPA within twenty-four (24) hours for direction on sampling and cleanup requirements.

[2] Information was submitted by BETA Group, Inc. on behalf of FRRA to support a risk-based cleanup and disposal approach for PCB remediation waste under 40 CFR § 761.61(c). Information was provided dated July 15, 2011 (Risk-Based Cleanup Plan); September 1, 2011 (Response to EPA Comments via e-mail on September 15, 2011); and, October 5, 2011 (Historical Data and Response to EPA Comments via e-mail); and, October 12, 2011 (duplicate report results). These submissions will be referred to as the "Notification."

6. FRRA is responsible for the actions of all officers, employees, agents, contractors, subcontractors, and others who are involved in activities conducted under this Approval. If at any time FRRA has or receives information indicating that FRRA or any other person has failed, or may have failed, to comply with any provision of this Approval, it must report the information to EPA in writing within twenty-four (24) hours of having or receiving the information.

7. This Approval does not constitute a determination by EPA that the transporters or disposal facilities selected by FRRA are authorized to conduct the activities set forth in the Notification. FRRA is responsible for ensuring that its selected transporters and disposal facilities are authorized to conduct these activities in accordance with all applicable federal, state and local statutes and regulations.

NOTIFICATION AND CERTIFICATION CONDITIONS

8. This Approval may be revoked if the EPA does not receive written notification from FRRA of its acceptance of the conditions of this Approval within ten 10 business days of receipt.

9. FRRA shall notify EPA in writing of the scheduled date of commencement of on-site activities at least three (3) business days prior to conducting any work under this Approval.

10. Prior to initiating onsite work under this Approval, FRRA shall submit the following information for EPA review and/or approval:

    a. A certification signed by its selected contractor, stating that the contractor(s) has read and understands the Notification, and agrees to abide by the conditions specified in this Approval;

    b. A contractor work plan prepared and submitted by the selected contractor, detailing the procedures that will be employed for cleanup and disposal of PCB-contaminated soils. This work plan should also include information on dust monitoring; waste storage, handling, and disposal for each waste stream type; and, for equipment decontamination; and,

    c. A certification signed by the selected analytical laboratory, stating that the laboratory has read and understands the analytical and quality assurance requirements specified in the Notification and in this Approval.

REMEDIAL AND DISPOSAL CONDITIONS

11. The cleanup level for *PCB remediation waste* (i.e. soil) at the Site shall be less than or equal to (≤) 100 parts per million for consolidation beneath a compliant cap in accordance with § 761.61(a)(7).

    a. *Bulk PCB remediation waste* verification samples (i.e. soil) shall be collected on a bulk basis (e.g. mg/Kg) and in accordance with frequency detailed in the Notification. Samples shall be collected from both excavation bottoms and sidewalls.

    b. Chemical extraction for PCBs shall be conducted using Methods 3500B/3540C of SW-846 for solid matrices and Method 3500B/3510C of SW-846 for aqueous matrices; and, chemical analysis for PCBs shall be conducted using Method 8082 of SW-846, unless another extraction or analytical method(s) is validated according to Subpart Q.

12. To the maximum extent practical, engineering controls shall be utilized to minimize the potential for PCB releases during the cleanup. In addition, to the maximum extent possible, disposable equipment and materials, including PPE, will be used to reduce the amount of decontamination necessary.

13. PCB waste (at any concentration) generated as a result of the activities described in the Notification, excluding any decontaminated materials, shall be marked in accordance with § 761.40; stored in a manner prescribed in § 761.65; and, disposed of in accordance with 40 CFR § 761.61, unless otherwise specified below:

    a. Decontamination wastes and residues shall be disposed of in accordance with 40 CFR § 761.79(g)(6).

    b. Moveable equipment, tools, and sampling equipment shall be decontaminated in accordance with either 40 CFR § 761.79(b)(3)(i)(A), § 761.79(b)(3)(ii)(A), or § 761.79(c)(2).

    c. PCB-contaminated water generated during decontamination or dewatering shall be decontaminated in accordance with 40 CFR § 761.79(b)(1) or disposed of under § 761.60.

DEED RESTRICTION AND USE CONDITIONS

14. FRRA shall submit for EPA review and approval, a draft deed restriction for the Site. The draft deed restriction may be in the form of an activity and use limitation (AUL) pursuant to the Massachusetts Department of Environmental Protection (MassDEP) regulations. Within forty-five (45) days of receipt, EPA shall review and approve the draft deed restriction, approve with minimal conditions, or request specific changes. If

EPA requests specific changes, FRRA shall submit a revised draft deed restriction for EPA review and approval within thirty (30) days of EPA's request. The deed restriction shall include: a description of the extent and levels of contamination at the property, including both the consolidation/cap area and the areas located outside the consolidation/cap area, and the PCB remedial actions conducted; a description of the use restrictions for the Site; and the long-term monitoring and maintenance requirements on the Site. The long-term monitoring and maintenance shall include: a description of the activities that will be conducted, including inspection criteria, frequency, and routine maintenance activities; sampling protocols, sampling frequency, and analytical criteria; and EPA reporting requirements.

FRRA shall submit the results of these long-term monitoring and maintenance activities to EPA as detailed in the deed restriction. Based on its review of the results, EPA may determine that modification to the deed restriction is necessary in order to monitor and/or evaluate the long-term effectiveness of the engineered control (i.e., cap).

15. Within fourteen (14) days of receipt of EPA's approval of the draft deed restriction, the deed restriction shall be signed and recorded. A copy of this Approval shall be attached to the deed restriction, but the specific terms of the deed restriction (and not the Approval) shall govern any issue of interpretation of the deed restriction.

16. FRRA, and any subsequent owner, lessee, or transferee seeking the benefit of this Approval, shall notify the EPA of the sale, lease or transfer of any portion of the Site, in writing, no later than thirty (30) days prior to any sale, lease or transfer. This notification shall include the name, address, and telephone number of the new owner(s), lessee(s) or transferee(s). In the event that FRRA sells, leases or transfers any portion of the Site, FRRA shall continue to be bound by all the terms and conditions of this Approval, except as provided below. EPA may allocate some or all of this Approval's responsibilities to a new owner, lessee or transferee through the issuance of a modification of this Approval ("New Owner Modification") as follows:

a. FRRA and the new owner(s), lessee(s) or transferee(s) must request, in writing, that the EPA issue a New Owner Modification to the new owner(s), lessee(s) or transferee(s) which transfers some or all responsibilities to comply with the terms and conditions of this Approval to that entity or entities;

b. The EPA reviews the request, and determines whether to issue a New Owner Modification;

c. EPA provides a draft New Owner Modification for comment by the requesting party(ies) and, following its receipt and review of any written comments, EPA shall provide the final New Owner Modification to the party(ies); and,

d. The new owner(s), lessee or transfer entity provides written notification to the EPA of its acceptance of and intention to comply with the terms and conditions of the final New Owner Modification. The New Owner Modification may be

withdrawn if the EPA does not receive written notification from the new owner(s), lessee(s) or transferee(s) of its acceptance of, and intention to comply with, the terms and conditions of the New Owner Modification within thirty (30) days of the date of the New Owner Modification. Under such circumstances, all terms and conditions of this Approval will continue to be binding on FRRA.

17. In the event that the sale, lease or transfer of the Site will involve or result in a change in the use of the Site, EPA may revoke, suspend, and/or modify this Approval or the New Owner Modification if it finds, due to the change in use, that this risk-based cleanup and disposal action will not be protective of health or the environment. The New Owner shall record any amendment to the deed restriction, resulting from any approved Site use change(s) or plan modification(s), within sixty (60) days of such change(s). To be effective in amending the original deed restriction as it may apply to FRRA, the New Owner must secure the agreement and consent of FRRA to amend the deed restriction, and obtain any necessary subordinations of prior recorded interests that may be affected by the terms of the amended deed restriction.

18. In any sale, lease or transfer of the Site, FRRA shall retain sufficient access rights to enable it to continue to meet the obligations under this Approval for long-term maintenance and monitoring of the Site, except as provided otherwise in a re-issued approval.

INSPECTION, MODIFICATION AND REVOCATION CONDITIONS

19. Any modification(s) in the plan, specifications, and information submitted by FRRA, contained in the Notification, and forming the basis upon which this Approval has been issued, must receive prior written approval from the EPA. FRRA shall inform the EPA of any modification, in writing, at least ten (10) days prior to such change. No action may be taken to implement any such modification unless the EPA has approved of the modification, in writing. The EPA may request additional information in order to determine whether to approve the modification.

    If such modification involves a change in the use of the Site which results in exposures not considered in the Notification, the EPA may revoke, suspend, and/or modify this Approval upon finding that this risk-based cleanup and disposal action may pose an unreasonable risk of injury to health or the environment due to the change in use. EPA may take similar action if the EPA does not receive requested information needed from FRRA to make a determination regarding potential risk.

20. Any departure from the conditions of this Approval without prior, written authorization from the EPA may result in the revocation, suspension and/or modification of the Approval, in addition to any other legal or equitable relief or remedy the EPA may choose to pursue.

21. Any misrepresentation or omission of any material fact in the Notification or in any future records or reports may result in the EPA's revocation, suspension and/or modification of the Approval, in addition to any other legal or equitable relief or remedy the EPA may choose to pursue.

22. Approval for these activities may be revoked, modified or otherwise altered: if EPA finds a violation of the conditions of this Approval or of 40 CFR Part 761, including EPA's PCB Spill Cleanup Policy, or other applicable rules and regulations; if EPA finds that these activities present an unreasonable risk to public health or the environment; if EPA finds that there is migration of PCBs from the Site; or if EPA finds that changes are necessary to comply with new rules, standards, or guidance for such approvals. FRRA may apply for appropriate modifications in the event new rules, standards, or guidance comes into effect.

23. FRRA shall allow any authorized representative of the Administrator of the EPA to inspect the Site and to inspect records and take samples as may be necessary to determine compliance with the PCB regulations and this Approval. Any refusal by FRRA to allow such an inspection (as authorized by Section 11 of TSCA) shall be grounds for revocation of this Approval.

RECORDKEEPING AND REPORTING CONDITIONS

24. FRRA shall prepare and maintain all records and documents required by 40 CFR Part 761, including, but not limited to, the records required by Subparts J and K. FRRA shall maintain a written record of the cleanup and the analytical sampling for activities conducted under this Approval in one central location. All records shall be made available for inspection by authorized representatives of the EPA, until such time as EPA approves in writing a request for an alternative disposition of such records.

25. FRRA shall submit a Final Completion Report (Report) to the EPA within 120 days of completion of the activities described under this Approval. At a minimum, this Report shall include: a discussion of the project activities; characterization and confirmation sampling analytical results; copies of the accompanying analytical chains of custody; field and laboratory quality control/quality assurance checks; an estimate of the quantity of PCBs removed and disposed off-site; copies of manifests; and, copies of certificates of disposal or similar certifications issued by the disposer, if applicable. The Report shall also include a copy of the recorded deed restriction and a certification signed by a FRRA official verifying that the authorized activities have been implemented in accordance with this Approval and the Notification.

26. Required submittals shall be mailed to:

Kimberly N. Tisa, PCB Coordinator
United States Environmental Protection Agency
5 Post Office Square, Suite 100
Mail Code: OSRR07-2
Boston, Massachusetts 02109-3912

27. No record, report or communication required under this Approval shall qualify as a self-audit or voluntary disclosure under EPA audit, self disclosure or penalty policies.

****

END OF ATTACHMENT 1